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Antelope and JAB Uranium Project
USNRC License Application
Sweetwater County, Wyoming

Volume III
Environmental Report
Section 3.5 - Section 10

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3.5 ECOLOGICAL RESOURCES

3.5.1 Introduction

This section describes the existing ecological resources within the Antelope and JAB License Area. The analysis consisted of a review of documents, databases, and reports in conjunction with field surveys.

All vegetation sampling procedures were designed according to the Wyoming Department of Environmental Quality – Land Quality Division (WDEQ-LQD) Rules and Regulations for Non-Coal Permitting, Guideline 2 (November 1997), and the methodology approved by the WDEQ-LQD.

The wetland surveys were conducted in accordance with the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region. All Other Waters of the United States (OWUS) (40 CFR –Part 404) were also assessed during the surveys. The routine wetland delineation approach with onsite inspection was utilized, and the survey was conducted by pedestrian reconnaissance and color infra-red (CIR) photography. Identification of potential wetlands was based on visual assessment of vegetation and hydrology indicators, as well as intrusive soil sampling to determine the presence of wetland criteria indicators. United States Army Corps of Engineers (USACE) Data Forms-Great Plains Region (Draft), were utilized for each observation point. Hydrology and soils were evaluated whenever a plant community type met hydrophytic vegetation parameters based on the Dominance Test and Prevalence Index (as defined by the USACE Great Plains Regional Supplement), or whenever indicators suggested the potential presence of a seasonal wetland area under normal circumstances.

Background information on wildlife in the vicinity of the Antelope and JAB License Area was obtained from several sources, including the South Powder River Basin Coal FEIS (BLM 2003a), records from the Wyoming Game and Fish Department (WGFD), Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), and the U.S. Forest Service (USFS), and personal contact with biologists from those four agencies. Site-specific data for the Antelope and JAB License Area were obtained from several sources, including WDEQ/LQD mine permit applications and annual wildlife monitoring reports for the various applicants and the neighboring Bates Creek, Cutthroat, and Rainbow CBM projects. Due to its proximity to existing mines, the proposed project area has also received extensive coverage during baseline and annual wildlife monitoring surveys for nearly 4 years. Both types of wildlife surveys encompass a large perimeter around mine permit areas. Consequently, all but the southeastern and extreme western sections have been included in multiple baseline studies and annual wildlife monitoring

efforts associated with the Bates Creek, Cutthroat, and Rainbow coal bed methane (CBM) activities.

3.5.2 Regional Setting

The License Area (consisting of two sites) is located in south central Wyoming in the northeastern section of Sweetwater County, Wyoming. The License Area is located about 100 miles northeast of Rawlins, WY. The center of the Antelope site is located 15 miles west of Bairoil, WY and the center of the JAB site is located about 35 miles west of Bairoil. The License Area (both sites) may be accessed from Rawlins, Wyoming by traveling about 30 miles north on State Highway 287 to Lamont, WY. From Lamont, travel west on State Road 73 (Bairoil Road) for about 15 miles to reach the eastern boundary of the Antelope site. The Bairoil Road continues through the entire Antelope site, which is 6.5 miles across. To access the JAB site from the western boundary of the Antelope site, continue traveling west/northwest on Baroil Road for another 6 miles to where Bairoil Road intersects with Arapahoe Creek and then travel south on a service four-wheel-drive road for about 0.5 miles to reach the northern boundary of the JAB site. The License Area is located within the Great Divide Basin a large intermontane topographic and structural basin that is part of the Wyoming Basin Physiographic Province. The terrain is flat to rolling hills, and slopes downward along ephemeral draws (BLM 2007). Elevations in the basin range from 6,900 to 7,400 feet above mean sea level (USGS 1995). Average annual precipitation for the License Area ranges from 8 to 12 inches per year (SWWRC 2001).

The License area is all public lands used for sheep and cattle grazing as the principal land use in the region for many years, although conventional oil and gas production has also had a long-term presence in the area.

3.5.3 Climate

The project region is located in a semi-arid or steppe climate. The region is characterized seasonally by moderately cold winters, hot dry summers, relatively warm springs and cool autumns. Temperature extremes range from roughly -20° F in the winter to 95° F in the summer. The "last freeze" occurs during early to mid June and the "first freeze" early September due to the high elevation.

Yearly precipitation totals are typically near 9.5 - 10 inches. The region is prone to severe thunderstorm events throughout the spring and early summer months. Single thunderstorm events account for the majority of the precipitation during this time period. In a typical year, the area will see 3 or 4 severe thunderstorm events (as defined by the

National Weather Service criteria) and 30 to 40 thunderstorm days. Autumn stratiform rain and early winter snow events provide the bulk of the moisture (45%). Snow frequents the region throughout winter months (~45 in / year) and also contributes substantially to the precipitation totals.

Windy conditions are fairly common to the area. Nearly 85% of the time hourly wind speed averages exceed 4.5 m/s (10 mph). The predominant wind direction is west/southwest with the wind blowing out of that direction 30% of the time. A westerly secondary mode is also present. Surface wind speeds are relatively high all year-round, with hourly averages near 6.7 m/s (15 mph). Higher average wind speeds are encountered during the winter months while summer months experience lower average wind speeds.

3.5.4 Baseline Data

Ecological studies including baseline flora and fauna data were collected to fulfill the objectives specified in USNRC NUREG-1569, *Standard Review Plan for In situ Leach Uranium Extraction License Applications.* Ecological surveys were also conducted in accordance with applicable WDEQ-LQD, WGFD, and USFWS established guidelines. These agencies were consulted accordingly during development of survey plans to ensure adequate objectives, methodologies, and survey techniques were utilized.

Vegetation and wetland surveys were conducted by BKS Environmental Associates (BKS) of Gillette Wyoming during the spring/summer of 2007. Wildlife surveys were conducted by Jones and Stokes of Gillette during the summer and fall of 2007.

The following sections were developed from the final survey reports completed by BKS and Jones and Stokes.

3.5.5 Terrestrial Ecology

3.5.5.1 Vegetation

3.5.5.1.1 Survey Methodology

General

All sampling procedures were designed according to the WDEQ-LQD Rules and Regulations for Non-Coal Permitting, Guideline 2 (November 1997), and the methodology reviewed by the WDEQ prior to implementation of fieldwork.

Mapping

Five different plant communities were identified for the Antelope area, i.e., Sagebrush Grassland (SG), Breaks Grassland (BG), Mix-grass/Mat-cushion Grassland (MGMCG), Intermittent Stream Grassland (ISG), and Big Sagebrush Shrubland (BSS). Three different plant communities were identified for the Jab area, i.e., Big Sagebrush Shrubland (BSS), Mix-Grass/Mat-cushion Grassland (MGMCG), and Sagebrush Grassland (SG). Initially there were four mapped vegetation communities within the Jab area; however, during the field survey, the anticipated Greasewood Shrubland (GS) did not exist. All mapping was completed using 2001 color infra-red (CIR) aerial photography, which was then verified by field survey.

Transect Origin Selection

BKS uses ArcGIS 9.2 to generate random sample points. The random point generator is an extension tool from Hawths Analysis Tools (http://www.spatialecology.com) that randomly places points throughout selected polygons (different vegetation communities). These computer generated random points were then uploaded to a hand-held Garmin Global Positioning System (GPS) unit for actual location in the field.

Cover

A sample size of 22 50-meter point-intercept cover transects were sampled within the Breaks Grassland, Intermittent Stream Grassland Mix-grass/Mat-cushion Grassland, and Big Sagebrush Shrubland while Sagebrush Grassland had a sample size of 23 transects for a total of 111 cover points in the Antelope area. The Jab area had a sample size of 22

50-meter point-intercept cover transects were sampled within the Sagebrush Grassland, Mix-Grass/Mat-cushion Grassland, and Big Sagebrush Shrubland for a total of 66 cover points.

In the vegetation communities, each 50-meter transect represented a single sample point. Percent cover measurements were taken from point-intercepts at 1-meter intervals along a 50-meter transect. Transects that exceeded the boundaries of the vegetation community being sampled were redirected back into its vegetation community at a 90 degree angle from the original transect direction at the point of intercept. In instances where a 90 degree angle of reflection did not place the transect within the sampled community, a 45 degree angle of reflection was used. Each point-intercept represents 2% towards cover measurements.

Percent cover measurements record "first-hit" point-intercepts by live foliar vegetation species, litter, rock, or bare ground. Multiple hits on vegetation were recorded, but used only for the purpose of constructing a plant species list for each plant community.

Species Composition

A list of plant species encountered during 2007 quantitative sampling is compiled in Addendum 3.5-A by vegetation community type for each license area. The species list includes plant species sampled in cover transects as well as plant species observed along the belt transect. Plant names in the *Rocky Mountain Vascular Plants of Wyoming* (Dorn, 3rd Edition) were utilized. Plant identification was confirmed by Robert Dorn when necessary. Scientific nomenclature followed that in use at the Rocky Mountain Herbarium in Laramie, Wyoming, during 2007.

Total Vegetation Cover

Vegetation data cover was recorded by species, using first hit data. All point intercepts of living vegetation and growth produced during the current growing season was counted toward total vegetation cover. Total vegetation cover measurements were expressed in absolute percentages for each sample point. Percent vegetation cover is the vertical projection of the general outline of plants to the ground surface. Cover summaries for each vegetation community by license area are contained in Addendum 3.5-B.

Total Ground Cover

Total ground cover data was recorded by live vegetation, litter, or rock, minus bare ground. Litter includes all organic material that is dead. Rock fragments were recorded when equal to or greater than 2 centimeters in size (i.e., sheet flow, minimum non-

erodible particle size). Total ground cover measurements were expressed in absolute percentages for each sample point. Total ground cover equals the sum of cover values for percent vegetation, percent litter, and percent rock.

Shrub Density

Even though shrub density sampling is not required for non-coal sites, this data will be taken at the time of cover sampling to ensure adequate use of field time. Summarization of that data can be found in Addendum 3.5-C.

Extended Reference Area

The Extended Reference Area (EXREFA) is a native land unit used to evaluate revegetation success on portions of the same native plant community that was affected by the mining operation. This study shows the mining operation will affect the five plant communities, Sagebrush Grassland, Breaks Grassland, Mix-grass/Mat-cushion Grassland, Intermittent Stream Grassland, and Big Sagebrush Shrubland. All areas of these communities not affected by mining activities will serve as EXREFA. The EXREFA will be as large as practical, at least 25 acres, considering land ownership patterns and land management history.

3.5.5.1.2 Vegetation Survey Results

Mapping

The proposed Antelope area acreage is 10,531 acres. Of these acres, the Sagebrush Grassland community was 6,636.17 acres (63.01%), the Breaks Grassland community was 2,104.60 acres (19.98%), the Mix-grass/Mat-cushion Grassland community was 583.68 acres (5.54%), the Big Sagebrush Shrubland was 1,058.58 acres (10.05%), and the Intermittent Stream Grassland was 147.97 acres (1.40%). The proposed Jab area acreage is 4,043 acres. Of these acres, the Sagebrush Grassland community was 2,537.49 acres (62.76%), the Mix-grass/Mat-cushion Grassland community was 1,005.01 acres (24.86%), and the Big Sagebrush Shrubland community was 500.50 acres (12.38%). Refer to Table 3.5-1 below for acreage of each vegetation community by permit area acreage, and ½ mile buffer acreage. Refer to Figures 3.5-1a & 3.5-1b (Addendum 3.5-D) showing vegetation community mapping units for the Antelope and Jab License Area.

Table 3.5-1. Acreage and Percent of Total Area for Each Map Unit.

Map Unit	License Area	% of Area	1/2 Mile Buffer Area	% of Area
Antelope Area				
Sagebrush Grassland	6,636.17	63.01	5,928.52	73.62
Breaks Grassland	2,104.60	19.98	757.35	9.41
Mix-grass/Mat-cushion Grassland	583.68	5.54	372.12	4.62
Intermittent Stream Grassland	147.97	1.40	43.62	0.54
Big Sagebrush Shrubland	1,058.58	10.05	950.48	11.80
Sub-total	**10,531**	**100.00**	**8,025.1**	**100.00**
Jab Area				
Sagebrush Grassland	2,537.49	62.76	2,695.42	59.08
Mix-grass/Mat-cushion Grassland	1,005.01	24.86	698.22	15.11
Big Sagebrush Shrubland	500.50	12.38	1,167.93	25.61
Sub-total	**4,043**	**100.00**	**4,561.57**	**100.00**
TOTAL	**14,574**	--	**12,613.67**	--

General

The EXREFA will remain unaffected over the course of the mining operation and will be used to evaluate revegetation success. The EXREFA will include portions of the same native plant communities that are affected by the minim operation but located outside those disturbed areas and within the License boundary.

3.5.5.1.3 Antelope Area Sagebrush Grassland

Cover

The Sagebrush Grassland plant community comprised 6,636.17 of the 10,531 acres of the Antelope area (63.01%). Twenty-three cover transects were sampled for this community. Absolute total vegetation cover was 48.54%. Absolute bare soil and litter/rock percentages were 27.83% and 23.48%, respectively. Absolute total ground cover was 72.17%. *Artemisia nova* (black sagebrush), provided the highest relative vegetation cover at 45.86%, while *Poa secunda* (Sandberg bluegrass) provided the next highest relative vegetation cover at 6.09%. Refer to Table 3.5-2 below for the absolute cover values.

Table 3.5-2 Antelope License Area 2007 Absolute Cover for the Sagebrush Grassland Vegetation Community.

Vegetation Parameter	Mean
Absolute Total Vegetation Cover (%)	48.54
Absolute Total Cover (%)	72.17

Sample Adequacy

There were 23 samples taken in the Sagebrush Grassland plant community. The sample adequacy formula, outlined in WDEQ-LQD Guideline 2, was utilized to determine the minimum required size of the sample population. Sagebrush Grassland met sample adequacy. Refer to Table 3.5-3 below for sample adequacy values.

Table 3.5-3 Antelope License Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Sagebrush Grassland.

Map Unit	Mean	Standard Deviation	Sample Adequacy	Actual Sample #	Z-Value	Confidence Level Achieved
Sagebrush Grassland						
Total Vegetation Cover	24.32	3.81	8.04	23.00	2.16	98.30
Total Ground Cover	36.23	3.69	3.40	23.00	3.33	99.90

Species Composition

Species composition for the Sagebrush Grassland plant community was dominated by perennial shrubs with 55.01% relative cover, followed by cool season perennial grasses with 32.96% relative cover Annual forbs had 0.19% relative cover, respectively. Sub-shrubs had a total of 1.63% relative cover. The cool season perennial grasses were mainly Sandberg bluegrass, *Koeleria macrantha* (prairie junegrass), *Achnatherum hymenoides* (Indian ricegrass) and *Poa cusickii* (Cusick's bluegrass). Perennial forbs were dominated by *Eremogone hookeri* (Hooker sandwort), *Stenotus acaulis* (stemless mock goldenweed), and *Erigeron caespitosus* (tufted fleabane). Annual forbs included *Gayophytum diffusum* (spreading groundsmoke). Present shrubs/subshrubs were black sagebrush, *Artemisia tridentata* (big sagebrush), *Chrysothamnus viscidflorus* (Douglas rabbitbrush), *Artemisia frigida* (fringed sagewort), *Krascheninnikovia lanata* (winterfat), and *Linanthus pungens* (granite prickly gilia). Refer to Table 3.5-4 for relative

Sagebrush Grassland cover summary and Addendum 3.5-B for a complete Sagebrush Grassland cover summary.

Table 3.5-4. Antelope License Area Vegetation Cover Sampling Data Summary of Species by Lifeform for the Sagebrush Grassland Community.

	Vegetation Cover	
	Absolute	**Relative (%)**
Cool Season Perennial Grasses		
Total	16.00	32.96
Annual Forbs		
Total	0.09	0.19
Perennial Forbs		
Total	4.96	10.22
Perennial Shrubs		
Total	26.70	55.01
Perennial Sub-Shrubs		
Total	0.79	1.63

3.5.5.1.4 Antelope Area Braeks Grassland

Cover

The Breaks Grassland plant community comprised 2,104.60 of the 10,531 acres of the Antelope area (19.98%). Twenty-two cover transects were sampled for this community. Absolute total vegetation cover was 44.34%. Absolute bare soil and litter/rock percentages were 15.41% and 12.41%, respectively. Absolute total ground cover was 34.59%. Big sagebrush provided the highest relative vegetation cover at 40.39%. Sandberg bluegrass provided the next highest cover at 17.84%. Refer to Table 3.5-5 below, for the absolute cover values

Table 3.5-5. Antelope License Area 2007 Absolute Cover for the Breaks Grassland Vegetation Community.

Vegetation Parameter	Mean
Absolute Vegetation Cover (%)	44.34
Absolute Total Cover (%)	34.59

Sample Adequacy

There were 22 samples taken in the Breaks Grassland plant community. The sample adequacy formula, outlined in WDEQ-LQD Guideline 2, was utilized to determine the minimum required size of the sample population. Breaks Grassland met sample adequacy. Refer to Table 3.5-6 below for sample adequacy values.

Table 3.5-6. Antelope License Area Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Breaks Grassland.

Map Unit	Mean	Standard Deviation	Sample Adequacy	Actual Sample #	Z-Value	Confidence Level Achieved
Breaks Grassland						
Total Vegetation Cover	22.18	3.74	9.32	22.00	1.97	97.56
Total Ground Cover	35.05	5.29	7.46	22.00	2.20	98.61

Species Composition

Species composition for the Breaks Grassland plant community was dominated by perennial shrubs with 50.02% relative cover, followed by cool season perennial grasses with 31.96% relative cover. Annual forbs had 1.22% relative cover, respectively. Subshrubs had a total 4.10% relative cover. The cool season perennial grasses were mainly Sandberg bluegrass, prairie junegrass, *Hesperostipa comata* (needleandthread), and *Elymus spicatus* (bluebunch wheatgrass). Perennial forbs were dominated by Hooker sandwort, stemless mock goldenweed, and *Phlox hoodii* (Hoods phlox). Annual forbs included spreading groundsmoke and *Descurainia sophia*, (flixweed tansy mustard). Shrubs and subshrubs included black sagebrush, big sagebrush, Douglas rabbitbrush, fringed sagewort, winterfat, granite prickly gilia, *Atriplex gardneri* (Gardner saltbush), and *Gutierrezia sarothrae* (broom snakeweed). Refer to Table 3.5-7 for relative Breaks Grassland cover summary and Addendum 3.5-B for a complete Breaks Grassland cover summary.

Table 3.5-7. Antelope License Area Vegetation Cover Sampling Data Summary of Species by Lifeform for the Breaks Grassland Community.

	Vegetation Cover	
	Absolute	Relative (%)
Cool Season Perennial Grasses		
Total	14.17	31.96
Annual Forbs		
Total	0.54	1.22
Perennial Forbs		

Total	5.63	12.70
Perennial Shrubs		
Total	22.18	50.02
Perennial Sub-Shrubs		
Total	1.82	4.10

3.5.5.1.5 Antelope Area Mix-grass/Mat-cushion Grassland

Cover

The Mix-grass/Mat-cushion Grassland plant community comprised approximately 583.68 of the 10,531 acres of the Antelope area (5.54%). Twenty-two cover transects were sampled for this community. Absolute total vegetation cover was 36.06%. Absolute bare soil and litter/rock percentages were 36.09 and 27.82, respectively. Absolute total ground cover was 63.91%. Big sagebrush provided the highest relative vegetation cover at 20.94%, while Sandberg bluegrass provided the next highest relative vegetation cover at 19.66%. Refer to Table 3.5-8 below for the absolute cover values.

Table 3.5-8. Antelope License Area 2007 Absolute Cover for the Mix-grass/Mat-cushion Grassland Vegetation Community.

Vegetation Parameter	Mean
Absolute Total Vegetation Cover (%)	36.06
Absolute Total Cover (%)	63.91

Sample Adequacy

There were 22 samples taken in the Mix-grass/Mat-cushion Grassland plant community. The sample adequacy formula, outlined in WDEQ-LQD Guideline 2, was utilized to determine the minimum required size of the sample population. Mix-Grass/Mat-cushion Grassland met sample adequacy. Refer to Table 3.5-9 below for sample adequacy values.

Table 3.5-9. Antelope License Area Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Mix-grass/Mat-cushion Grassland.

Map Unit	Mean	Standard Deviation	Sample Adequacy	Actual Sample #	Z-Value	Confidence Level Achieved
Mix-grass/Mat-cushion Grassland						
Total Vegetation Cover	18.27	3.35	11.02	22.00	1.81	96.49
Total Ground Cover	31.73	4.41	6.33	22.00	2.39	99.16

Species Composition

Species composition for the Mix-grass/Mat-cushion Grassland plant community was dominated by perennial shrubs with 39.07% relative cover, followed by cool season perennial grasses with 30.98% relative cover. Annual forbs and perennial forbs had 0.50% and 26.71% relative cover, respectively. Succulents had 0.50% relative cover and subshrubs had 2.25% relative cover. The cool season perennial grasses were mainly

Sandberg bluegrass, needleandthread, and bluebunch wheatgrass. Perennial forbs were dominated by Hoods phlox, stemless mock goldenweed, *Phlox muscoides* (musk phlox), and Hooker sandwort. Annual forbs included flixweed tansymustard. The subshrubs present were fringed sagewort, broom snakeweed, granite prickly gillia, and *Hymenoxys spp.* (rubberweed). Also present was the succulent *Opuntia polyacantha* (plains prickly pear). Refer to Table 3.5-10 below for relative Mix-grass/Mat-cushion Grassland cover summary and Addendum 3.5-B for a complete Mix-grass/Mat-cushion Grassland cover summary.

Table 3.5-10. Antelope License Area Vegetation Cover Sampling Data Summary of Species by Lifeform for the Mix-grass/Mat-cushion Grassland Community.

	Vegetation Cover	
	Absolute	**Relative (%)**
Cool Season Perennial Grasses		
Total	11.17	30.98
Annual Forbs		
Total	0.18	0.50
Perennial Forbs		
Total	9.63	26.71
Perennial Shrubs		
Total	14.09	39.07
Perennial Sub-Shrubs		
Total	0.81	2.25
Succulents		
Total	0.18	0.50

3.5.5.1.6 Jab Area Sagebrush Grassland

Cover

The Sagebrush Grassland plant community comprised 2,537.49of the 4,043 acres of the Jab area (62.76%). Twenty-two cover transects were sampled for this community. Absolute total vegetation cover was 39.08%. Absolute bare soil and litter/rock percentages were 27.73% and 31.46%, respectively. Absolute total ground cover was 72.18%. Black sagebrush and big sagebrush provided the highest relative vegetation cover at 21.62%, while Sandberg bluegrass provided the next highest relative vegetation cover at 9.64%. Refer to Table 3.5-11 below for the absolute cover values.

Table 3.5-11. Jab License Area 2007 Absolute Cover for the Sagebrush Grassland Vegetation Community.

Vegetation Parameter	Mean
Absolute Total Vegetation Cover (%)	39.08
Absolute Total Cover (%)	72.18

Sample Adequacy

There were 22 samples taken in the Sagebrush Grassland plant community. The sample adequacy formula, outlined in WDEQ-LQD Guideline 2, was utilized to determine the minimum required size of the sample population. Sagebrush Grassland met sample adequacy. Refer to Table 3.5-12 below for sample adequacy values.

Table 3.5-12. Jab License Area Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Sagebrush Grassland.

Map Unit	Mean	Standard Deviation	Sample Adequacy	Actual Sample #	Z-Value	Confidence Level Achieved
Sagebrush Grassland						
Total Vegetation Cover	19.59	2.84	6.89	22.00	2.29	99.16
Total Ground Cover	35.86	2.19	1.22	22.00	5.43	99.99

Species Composition

Species composition for the Sagebrush Grassland plant community was dominated by perennial shrubs with 46.26% relative cover, followed by cool season perennial grasses with 35.62% relative cover. Annual and perennial forbs had 0.23% and 7.42% relative

cover, respectively. Sub-shrubs had a total 10.01% relative cover. Succulents had 0.46% relative cover. The cool season perennial grasses were mainly Sandberg bluegrass, Indian ricegrass, and needleandthread. Annual forbs included spreading groundsmoke. Perennial forbs were dominated by Hooker sandwort, Hoods phlox, musk phlox, and littleleaf pussytoes. Present shrubs/subshrubs were black sagebrush, big sagebrush, Douglas rabbitbrush, fringed sagewort, *Artemisia pedatifida* (birdsfoot sagewort), Gardner saltbush, *Hymenoxys richardsonii* (pingue rubberweed), winterfat, and granite prickly gilia. Also present was plains prickly pear. Refer to Table 3.5-13 for relative Sagebrush Grassland cover summary and Addendum 3.5-B for a complete Sagebrush Grassland cover summary.

Table 3.5-13. Jab License Area Vegetation Cover Sampling Data Summary of Species by Lifeform for the Sagebrush Grassland Community. All values are means.

	Vegetation Cover	
	Absolute	**Relative (%)**
Cool Season Perennial Grasses		
Total	13.92	35.62
Annual Forbs		
Total	0.09	0.23
Perennial Forbs		
Total	2.90	7.42
Perennial Shrubs		
Total	18.08	46.26
Perennial Sub-Shrubs		
Total	3.91	10.01
Succulents		
Total	0.18	0.46

3.5.5.1.7 Jab Area Mix-grass/Mat-cushion Grassland

Cover

The Mix-grass/Mat-cushion Grassland plant community comprised 1,005.01 of the 4,043 acres of the Jab area (24.86%). Twenty-two cover transects were sampled for this community. Absolute total vegetation cover was 37.71%. Absolute bare soil and litter/rock percentages were 28.00% and 34.19%, respectively. Absolute total ground cover was 71.73%. Sandberg bluegrass provided the highest relative vegetation cover at 16.39%. Musk phlox and Indian ricegrass, provided the next highest cover at 12.30%. Refer to Table 3.5-14-20 below, for the absolute cover values.

Table 3.5-14. Jab License Area 2007 Absolute Cover for the Mix-grass/Mat-cushion Grassland Vegetation Community.

Vegetation Parameter	Mean
Absolute Vegetation Cover (%)	37.71
Absolute Total Cover (%)	71.73

Sample Adequacy

There were 22 samples taken in the Mix-grass/Mat-cushion Grassland plant community. The sample adequacy formula, outlined in WDEQ-LQD Guideline 2, was utilized to determine the minimum required size of the sample population. Mix-grass/Mat-cushion Grassland met sample adequacy. Refer to Table 3.5-15 below for sample adequacy values.

Table 3.5-15. Jab License Area Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Mix-Grass/Mat-cushion Grassland.

Map Unit	Mean	Standard Deviation	Sample Adequacy	Actual Sample #	Z-Value	Confidence Level Achieved
Upland Grassland						
Total Vegetation Cover	18.64	3.14	9.30	22.00	1.97	97.66
Total Ground Cover	35.86	3.87	3.82	22.00	3.07	99.89

Species Composition

Species composition for the Mix-grass/Mat-cushion Grassland plant community was dominated by cool season perennial grasses with 43.12% relative cover, followed by perennial forbs with 25.56% relative cover. Annual forbs and perennial succulents had 0.24% and 0.48% relative cover, respectively. Shrubs and subshrubs had a 17.10% and

13.50% relative cover. The cool season perennial grasses were mainly Sandberg bluegrass, Indian ricegrass, bluebunch wheatgrass, and needleandthread. Perennial forbs were dominated by musk phlox, Hooker sandwort and stemless mock goldenweed. Annual forbs included spreading groundsmoke. Shrubs and subshrubs included black sagebrush, big sagebrush, Douglas rabbitbrush, fringed sagewort, birdsfoot sagewort, Gardner saltbush, winterfat, and granite prickly gilia Also present were lichens, and plains prickly pear. Refer to Table 3.5-16 for relative Mix-Grass/Mat-cushion Grassland

cover summary and Addendum 3.5-B for a complete Mix-Grass/Mat-cushion Grassland cover summary.

Table 3.5-16. Jab License Area Vegetation Cover Sampling Data Summary of Species by Lifeform for the Mix-grass/Mat-cushion Grassland Community.

	Vegetation Cover	
	Absolute	**Relative (%)**
Cool Season Perennial Grasses		
Total	16.26	43.12
Annual Forbs		
Total	0.09	0.24
Perennial Forbs		
Total	9.64	25.56
Perennial Shrubs		
Total	6.45	17.10
Perennial Sub-Shrubs		
Total	5.09	13.50
Succulents		
Total	0.18	0.48

3.5.5.1.8 Jab Area Big Sagebrush Shrubland

Cover

The Big Sagebrush Shrubland plant community comprised approximately 500.50 of the 4,043 acres of the Jab area (12.38%). Twenty-two cover transects were sampled for the Big Sagebrush Shrubland community. Absolute total vegetation cover was 42.08%. Absolute bare soil and litter/rock percentages were 27.00% and 30.64%, respectively. Absolute total ground cover was 73.00%. Big sagebrush provided the highest relative vegetation cover at 31.11%, while black sagebrush provided the next highest relative vegetation cover at 21.60%. Refer to Table 3.5-17 below for the absolute cover values.

Table 3.5-17. Jab License Area 2007 Absolute Cover for the Big Sagebrush Shrubland Vegetation Community.

Vegetation Parameter	Mean
Absolute Total Vegetation Cover (%)	42.08
Absolute Total Cover (%)	73.00

Sample Adequacy

There were 22 samples taken in the Big Sagebrush Shrubland plant community. The sample adequacy formula, outlined in WDEQ-LQD Guideline 2, was utilized to determine the minimum required size of the sample population. Big Sagebrush Shrubland met sample adequacy. Refer to Table 3.5-18 below for sample adequacy values.

Table 3.5-18. Jab License Area Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Big Sagebrush Shrubland.

Map Unit	Mean	Standard Deviation	Sample Adequacy	Actual Sample #	Z-Value	Confidence Level Achieved
Big Sagebrush Shrubland						
Total Vegetation Cover	21.05	3.66	9.91	22.00	1.91	97.19
Total Ground Cover	36.14	4.30	4.64	22.00	2.79	99.74

Species Composition

Species composition for the Big Sagebrush Shrubland plant community was dominated by perennial shrubs with 64.38% relative cover, followed by cool season perennial grasses with 26.14% relative cover. Annual forbs had 0.86% relative cover, respectively. Perennial forbs had 5.18% relative cover. Subshrubs had a total of 3.45% relative cover. The cool season perennial grasses were dominated by Sandberg bluegrass and Indian ricegrass. Perennial forbs were dominated by Hooker sandwort. Annual forbs included spreading groundsmoke.. Present shrubs and subshrubs were black sagebrush, big sagebrush, Douglas rabbitbrush, *Sarcobatus vermiculatus* (greasewood), birdsfoot sagewort, Gardner saltbush, and winterfat. Also present were lichens. Refer Table 3.5-19 below for relative Big Sagebrush Shrubland cover summary and to Addendum 3.5-B for a Big Sagebrush Shrubland complete cover summary.

Table 3.5-19. Jab License Area Vegetation Cover Sampling Data Summary of Species by Lifeform for the Big Sagebrush Shrubland Community.

	Vegetation Cover	
	Absolute	**Relative (%)**
Cool Season Perennial Grasses		
Total	11.00	26.14
Annual Forbs		
Total	0.36	0.86
Perennial Forbs		
Total	2.18	5.18
Perennial Shrubs		
Total	27.09	64.38
Perennial Sub-Shrubs		
Total	1.45	3.45

3.5.5.1.9 Vegetation Survey Discussion

The proposed 10,531 acre Antelope area consists of five vegetation communities: Sagebrush Grassland, Breaks Grassland, Mix-grass/Mat-cushion Grassland, Big Sagebrush Shrubland, and Intermittent Stream Grassland. The 4,043 acre Jab area consists of three vegetation communities: Sagebrush Grassland, Mix-grass/Mat-cushion Grassland, and Big Sagebrush Shrubland. Each community was investigated for baseline vegetation information in support of an NRC Source Materials License and a Regular Mine Permit Application.

No threatened or endangered species were encountered in the License area. No state designated weeds were encountered in the License area.

3.5.5.2 Wetlands

The following section discusses wetland delineations for the Antelope and JAB License Area in the Great Divide Basin. The Antelope and JAB License Area includes two sites, Antelope and JAB, totaling 14,574.00 acres. The wetland delineations were conducted on June 25-28, 2007 as part of the baseline assessment for the Antelope and JAB License Area to be included in support of a NRC Source Materials License Application and utilized for reclamation planning and mining infrastructure location.

The Antelope and JAB License Area is located approximately 10 to 22 miles west of Bairoil, Wyoming; the Antelope project is closer to Bairoil, while the JAB project is located further west.

The Antelope site is located in all or parts of:

Township 26N, Range 92W in Sections 7-12, 14-22, and 28-30.
Township 26N, Range 93W in Sections 11-15, and 22-24.

The JAB site is located in all or parts of:

Township 26N, Range 94W Sections 8-10, 13-16, and 20-22.

The JAB site has one planned wellfield location in Sections 13, 14, and 15 in T26N R94W. The Antelope site has four separate wellfield locations in Section 12, 15, and 18 in T26N R92W and Section 13 in T26N R93W. Other mining infrastructure locations have not yet been finalized such as the offices, Central Plant and Satellite.

Figures 3.5.-2a and 3.5-2b (Addendum 3.5-G) and Table 3.5-29 identifies the general area locations on a color infrared (CIR) map for both the Antelope and JAB License Areas.

Construction, operation, or reclamation activities, which cause disturbance or impacts to jurisdictional wetlands on the proposed Antelope and JAB License Area, will be performed in accordance with appropriate Nationwide Permits, if applicable. Nationwide Permit (NWP) 44 non-coal mining activities, which requires Pre-construction Notification (PCN) for all activities, NWP 12, utility line activities, which requires a PCN for an area where a section 10 permit is required, discharges that result in the loss of >1/10 acre, and NWP 14, linear transportation projects, which requires a PCN for ½ acre in non-tidal waters. NWP 44 has an acreage limit of half an acre for Waters of the United States (WoUS), NWP 12 and 14 also has a half an acre disturbance limit. Impacts to Other Waters of the United States (OWUS) are not considered under the acreage limit (Federal Register V. 72, No. 47/ Monday, March 12, 2007 Notices). All of the wetlands presented in this study are recommended to be non-jurisdictional since the wetlands are all isolated and do not support interstate commerce, also the Great Divide Basin in a closed basin.

3.5.5.2.1 Wetland Survey Methodology

The wetland surveys were conducted in accordance with the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. All wetlands and OWUS were also assessed during the surveys. The routine wetland delineation approach with onsite inspection was utilized, and the survey was conducted by pedestrian reconnaissance and CIR photography. Identification of potential wetlands was based on visual assessment of vegetation and hydrology indicators, as well as intrusive soil sampling to determine the presence of wetland criteria indicators. Wetland determination data forms - Arid West Region (Addendum 3.5-J), were utilized for each observation point. Hydrology and soils were evaluated whenever a plant community type met hydrophytic vegetation parameters based on the Dominance Test and Prevalence Index (as defined by the Arid West Regional Supplement), or whenever indicators suggested the potential presence of a seasonal wetland area under normal circumstances. BKS soil mapping of the License Area were reviewed for general soils information.

Potential wetlands (WoUS) and OWUS were initially identified via review of area maps to include the following:

1) USFWS 1977 Antelope Reservoir NWI
2) USFWS 1977 Osborne Draw NWI
3) US Geological Survey March 1997 Antelope Reservoir Quad CIR
4) US Geological Survey March 1997 Osborne Draw Quad CIR

Wetland indicator categories were identified for each dominant plant species noted through use of the National List of Vascular Plant Species that Occur in Wetlands, 1996 National Summary. Region 9 (Northwest) indicator categories were utilized for the License Area.

Field sample locations and resulting wetland boundaries were recorded with a hand-held Garmin III Plus Global Position System (GPS) unit in NAD 1983 Lat Longs and UTM Zone 13. BKS provided drafting services for the project.

3.5.5.2.2 Wetland Survey Results

The Antelope and JAB License Area generally occurred on uplands, with inclusions of several drainages. The main drainages that occurred in the License Area were dry and identified as non-wetlands. There were a few small tributaries where isolated wetland areas occurred. The two wetland areas were identified at drainage bottoms; however the wetlands were not continuous throughout the drainages. The wetland classifications

along the drainages were Palustrine Unconsolidated Bottom (PUB) OWUS. The proposed uranium mine may affect a total of 0.268 acres of PUB stream channel.

Within the Antelope site, the main drainage found in the area was a tributary to Osborne Draw. The soil series found within the main drainage was Relsob; while Leckman or Relsob were found within other smaller tributaries. The main drainage found within the JAB site was Arapahoe Creek. Glendive was the prevailing soil series found within the creek. Forelle or Leckman were noted within other smaller drainages in the License Area.

None of the soil series were found on the Wyoming Hydric Soils List for Sweetwater or Fremont counties. However, the northeast Sweetwater County soils are not mapped.
The Antelope site was characterized as Sagebrush Grassland, Mix Grass-Mat Cushion, Breaks Grassland, Intermittent Stream Grassland and Big Sagebrush Shrubland vegetation communities. The JAB site was described as having Sagebrush Grassland, Mix Grass-Mat Cushion, and Big Sagebrush Shrubland. The Antelope site major drainage was classified as Intermittent Stream Grassland, while the drainages in the JAB site was classified into the neighboring vegetation communities.

Most of the drainages in the Antelope and JAB License Area were composed of Big Sagebrush Shrubland, while the main drainage in the Antelope site was described as Intermittent Stream Grassland. The Big Sagebrush Shrubland comprised 1,058.58 acres and the Intermittent Stream Grassland comprised of 147.97, these two communities comprised of about 8.7% of the Antelope site. The dominant vegetation in the Big Sagebrush community was *Artemisia nova* (black sagebrush), *Artemisia tridentata* (big sagebrush), *Chrysothamnus viscidflorus* (Douglas rabbitbrush), *Gutierrezia sarothrae* (broom snakeweed) and *Opuntia polyacantha* (granite prickly gilia). The dominant vegetation in the Intermittent Stream Grassland is the above perennial shrubs and sub-shrubs as well as *Poa secunda* (Sandberg bluegrass) and *Achnatherum pinetorum* (pine needlegrass). Please refer to Section 3.5.5 for more details regarding the vegetation communities and plants found within the License Area and Addendum 3.5-H for the Antelope and JAB wetland vegetative species list. Identified wetland sites were also photographed and these are presented in Addendum 3.5-I.

Table 3.5-20: Summary of Wetlands within the Antelope and JAB License Area

License Area Antelope or JAB	Map and Plot ID (no Data Form 1 if italicized)	Legal Description	Photo #	2007 Delineation Designation	Cowardin Classification	Acreage of Cowardin Classification	Geomorphic Setting	Comments	Jurisdictional Recommendation
JAB	1	Sec. 16 T26N R94W	R1 P1-3	Wetland	R4SB	0.136	Drainage	Earthen Dam	Non-jurisdictional
JAB	2	Sec. 15 T26N R94W	R1 P4-5	Non-wetland	--	--	Ephemeral Drainage	--	--
JAB	3	Sec. 17 T26N R94W	R1 P6-7	Non-wetland	--	--	Ephemeral Drainage	--	--
JAB	4	Sec. 17 T26N R94W	No Photos	Non-wetland	--	--	Topographical Depression	--	--
JAB	5	Sec. 16 T26N R94W	R1 P16-17	Non-wetland	--	--	Small Drainage Channel	--	--
JAB	6	Sec. 22 T26N R94W	R1 P22	Non-wetland	--	--	Drainage	--	--
JAB	7	Sec. 21 T26N R94W	R1 P24	Non-wetland	--	--	Drainage	--	--
JAB	8	Sec. 22 T26N R94W	R1 P25	Non-wetland	--	--	Drainage	--	--
JAB	9	Sec. 23 T26N R94W	R2 P1-2	Non-wetland	--	--	Drainage Channel	--	--
JAB	10	Sec. 24 T26N R94W	R2 P5-6	Non-wetland	--	--	Drainage	--	--
Antelope	11	Sec. 8	R2	Wetland	PEMC	0.132	Drainage		--

License Area Antelope or JAB	Map and Plot ID (no Data Form 1 if italicized)	Legal Description	Photo #	2007 Delineation Designation	Cowardin Classification	Acreage of Cowardin Classification	Geomorphic Setting	Comments	Jurisdictional Recommendation
		T26N R92W	P7-11				bottom		
Antelope	12	Sec. 20 T26N R92W	R2 P12-13	Non-wetland	--	--	Drainage	Previously mapped as R4SBA	--
--	--	--	--	--	--	--	--	--	--
Antelope	13	Sec. 16 T26N R92W	No Photos	Non-wetland	--	--	Drainage	Previously mapped as R4SBA	--
Antelope	14	Sec. 16 T26N R92W	R2 P14-15	Non-wetland	--	--	Drainage	Previously mapped as R4SBA	--
Antelope	15	Sec. 16 T26N R92W	No photos	Non-wetland	--	--	Terrace	--	--
Antelope	16	Sec. 16 T26N R92W	R2 P17	Non-wetland	--	--	Terrace slope	--	--
Antelope	17	Sec. 10 T26N R92W	R2 P18	Non-wetland	--	--	Ephemeral Wash	Previously mapped as PEMC	--
Antelope	18	Sec. 11 T26N R92W	No Photos	Non-wetland	--	--	Drainage	Previously mapped as R4SBA	--
Antelope	19	Sec. 11 T26N R92W	R2 P19-20	Non-wetland	--	--	Ephemeral Drainage	Previously mapped as PEMC	--
Antelope	20	Sec. 11 T26N R92W	R2 P21	Non-wetland	--	--	Hillside	Hillside by W42	--

License Area Antelope or JAB	Map and Plot ID (no Data Form 1 if italicized)	Legal Description	Photo #	2007 Delineation Designation	Cowardin Classification	Acreage of Cowardin Classification	Geomorphic Setting	Comments	Jurisdictional Recommendation
Antelope	21	Sec. 11 T26N R92W	R2 P22	Non-wetland	--	--	Hillside	Hillside by W42	--

3.5.5.2.3 Discussions

Antelope site

The main drainage, in the Antelope site, is a tributary to Osborne Draw located in T26N R92W Sections 11, 12, 15, 16, 17, 19, and 20. This drainage was previously NWI mapped as R4SBA- Riverine Intermittent Streambed Temporarily flooded; however during the 2007 delineation, its designation was found to be non-wetland. Other previous NWI mapping occurred in Section 8, 10, and 11, all of which were mapped as PEMC- Palustrine Emergent Seasonally Flooded. The previously mapped PEMC areas in Sections 10 and 11 were found to be non-wetlands based on the 2007 delineation. The PEMC found in Section 10 was found to be non-wetland in 2007 based on not-sufficient hydrophytic vegetation and limited hydric soils and hydrology parameters. This PEMC is likely drying up and therefore classified as non-wetland. The PEMC found in Section 11, lacks hydrophytic vegetation, hydric soils, and hydrology. Section 8, PEMC, was designated as a wetland, however the designation changed to PUB- Palustrine Unconsolidated Bottom based on no pre-emergent vegetation present, only hydrophytic vegetation was present, hydrology secondary indicators were present, and the hydric soil was sandy.

JAB site

The JAB site had no previously identified NWI mapping present within its boundary. The main drainage, Arapahoe Creek, was located in T26N R94W in Sections 15, 16, and 17 and various small drainages located throughout the site. During the 2007 wetland delineation, one wetland was identified in the main drainage due to an earthen dam that was found in the drainage. The wetland was located in northeast quarter of Section 16 and was approximately 0.136 acres and was classified as a PUB. No water was present; however wetland hydrology indicators and hydrophytic vegetation were present.

3.5.5.2.4 Impact Analysis

Uranium One currently plans to construct a minimum of 6 wellfields on the Antelope and JAB License Area, 5 in the Antelope site and 1 in the JAB site. Other mineralized areas within the project boundaries will be further delineated for additional future wellfields. Based on the planned and potential wellfield locations no wetlands will be impacted due to the construction within the wellfield sites.

3.5.5.2.5 Wetland Survey Conclusions

The Antelope and JAB License Area had 0.268 acres of PUB wetland ponds present. All of the wetlands presented in this study are recommended to be non-jurisdictional because the wetlands are all isolated and the Great Divide Basin is a closed basin and does not have a significant nexus. Final determination of jurisdictional decision lies within the Corp of Engineers.

3.5.5.3 Wildlife

For ease of document viewing, all wildlife figures are located at the end of the document in Addendum 3.5-N.

3.5.5.3.1 General Setting

This section provides a general discussion of the affected environment and environmental consequences to wildlife (terrestrial vertebrates) expected to result from exploration drilling for, and eventual in situ recovery (ISR) of, uranium resources associated with the Antelope and JAB Uranium Project. In the following sections, discussions of impacts for a particular species will be combined when they are the same in both the Antelope and JAB License/Permit Areas. Impacts to terrestrial species will be discussed separately for each project area when impacts differ between the two locations. As no underground or open pit mining would occur as part of the Antelope and JAB Uranium Project, the analysis in this document was limited to the Proposed Action (initially, exploratory drilling) and No Action alternatives.

Uranium One, Americas (formerly Energy Metals Corporation) commissioned ICF Jones & Stokes (formerly Thunderbird-Jones & Stokes) to conduct baseline wildlife surveys for the Antelope and JAB Uranium Project. The proposed Antelope License/Permit Area spans approximately 10,535 acres in Township (T) 26 North (N), Ranges (R) 92-93 West (W) (Figure 3.5-3). The JAB License/Permit Area covers approximately 4,040 acres in T26N, R94W (Figure 3.5-4). The current Antelope and JAB Notice of Intent (NOI) boundaries fall within each area's proposed license/permit area, and encompass approximately the same acreage, respectively. However, this document was prepared under the assumption that drilling could occur anywhere within the proposed Antelope and JAB License/Permit Area and, thus, that entire area was considered and analyzed for impacts to wildlife species of concern. The Antelope and JAB Uranium Project Survey Area (hereafter, survey area) refers to the license/permit area and a surrounding one-half-mile to ten-mile survey perimeter, depending on the species. Due to their proximity, the western edge of the Antelope two-mile perimeter, which covers most species of interest,

adjoins the eastern edge of the JAB two-mile perimeter. The Lander, Wyoming Field Office of the Bureau of Land Management (BLM) has jurisdiction over the majority of the Antelope and JAB Survey Area, with the exception of portions of the extreme eastern and western extents, which are managed by the Rawlins BLM Field Office.

Most baseline wildlife information for the Antelope and JAB Uranium Project was collected between February 23 and July 29, 2007. Surveys for winter use by greater sage-grouse (*Centrocercus urophasianus*) were completed in December 2007 and January 2008 in the eastern portion (Antelope) of the survey area. Winter grouse surveys were not possible in the western portion (JAB) of the survey area during that period due to heavy snowfall and consequent impassible roads. Uranium One voluntarily continued monitoring of known wildlife features (primarily grouse leks and raptor nests) in the entire survey area again in spring 2008 to enhance the data base for this project. It is important to note that wildlife is a dynamic resource. However, the proposed operational annual monitoring should be adequated to evaluate impacts to wildlife populations and habitat.

Background information from previous wildlife monitoring conducted in the Antelope and JAB Survey Area was obtained from several sources, including BLM Field Offices in Lander and Rawlins, Wyoming and the Wyoming Game and Fish Department (WGFD) in Rawlins, Wyoming. In accordance with BLM biologists, the baseline wildlife surveys prioritized searches for and monitoring of sage-grouse leks, nesting raptors, mountain plovers (*Charadrius montanus*), prairie dog (*Cynomys spp.*) colonies, potential pygmy rabbit (*Sylvilagus idahoensis*) habitat, all BLM Sensitive Species, and other migratory bird species of management concern in Wyoming, as defined by the U. S. Fish and Wildlife Service (USFWS). Surveys for bald eagles (*Haliaeetus leucocephalus*), big game, and black-footed ferrets (*Mustela nigripes*) were not required for this project due to the absence of trees in the survey area, the availability of existing information from the WGFD, and the block clearance for ferrets issued by the USFWS in the survey area, respectively.

Survey protocols and habitat models for species of interest were obtained from BLM biologists and/or the WGFD. All surveys were conducted by qualified personnel using pedestrian searches or spotting scopes and binoculars to observe wildlife from vehicles parked at strategic vantage points. The survey area for greater sage-grouse encompassed a two-mile perimeter surrounding the Antelope and JAB License/Permit Area, whereas the survey area for Threatened and Endangered (T&E) Species, raptor nests, BLM sensitive species, and other migratory bird species of concern consisted of a one-mile perimeter. Surveys for pygmy rabbits and/or their potential habitat were limited solely to the Antelope and JAB License/Permit Area. Prairie dog colonies and their status (occupied or unoccupied) were recorded primarily in and within one-half mile of the

license/permit area. Boundaries around potential pygmy rabbit habitat and prairie dog colonies were mapped by walking their edges while recording Universal Transverse Mercator (UTM, NAD83) coordinates using a hand-held Global Positioning System (GPS) receiver. The UTMs for grouse leks and raptor nest sites were also recorded. Big game surveys were not required for this project, but an assessment of big game range classifications was requested. WGFD range classifications for pronghorn (*Antilocapra americana*) and mule deer (*Odocoileus hemionus*) were determined within a two-mile perimeter around the license/permit area, whereas elk (*Cervus elaphus*) range classifications were determined for a ten-mile perimeter. Incidental observations of all wildlife species, as well as wild horses, were recorded throughout the entire survey area during 2007 and 2008. Documentation for other species of interest (breeding birds, small mammals, etc.) observed during those surveys included their location (legal descriptions and UTM coordinates), the number of individuals, sex and age (when possible), habitat association, and general activity

3.5.5.3.2 Affected Environment

The Antelope and JAB Uranium Project is located in the northeastern corner of the Great Divide Basin. The basin is an oval-shaped structural depression covering about 3,500 square miles in Sweetwater and Fremont Counties, Wyoming (Roosevelt and Goldwater 2005). It is bounded by structural uplifts on all sides: the Wind River and Granite Mountains on the north, the Rawlins Uplift on the east, the Wamsutter Arch on the south, and the Rock Springs Uplift on the west. The survey area consists of rolling hills and ridges with low to moderate topographic relief. The climate is continental semi-arid, with the majority of precipitation occurring between April and September. The weather is characterized by high temperatures in the summer, and low temperatures and high winds throughout the winter and early spring.

The Antelope and JAB Survey Area is comprised entirely of public lands under the jurisdiction of the Lander and Rawlins BLM Field Offices. Cattle-grazing has been the principal land use in the region for many years. Sheep grazing is also a licensed use but sheep are seldom, if ever, actually present in the study area. Livestock pasture fencing and cattle guards are present in some parts of the survey area. However, gates along the fence lines are left open when livestock are not grazing the area, allowing for wildlife movement through the area. Conventional oil and gas production has also had a long-term presence in the area, with the associated infrastructure (roads, power lines, wells, pumps, etc.) visible across the landscape. The pronghorn is the most common wild herbivore present on a year-long basis. A smaller number of elk and mule deer also inhabit the general area. In addition to wild ungulates and domestic livestock, a controlled number of wild horses graze year-round throughout the entire survey area.

The Antelope and JAB Survey Area is comprised primarily of Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) steppe and desert shrubland communities indigenous to the northern Great Plains (Knight 1994). Wyoming big sage is the predominant browse plant species, though rabbitbrush (*Chrysothamnus* spp.), salt bushes (*Atriplex* spp.), and bud sage (*Artemisia spinescens*) are also present. Robust stands of Wyoming big sage exist in several low drainages that cross the area. Trees are completely absent from the Antelope and JAB Survey Area. During the 2007 wildlife survey period, the range appeared healthy and vigorous, and supported a desirable diversity of plant structure and species. The one exception to this was in the areas immediately surrounding livestock watering locations. Noxious weed infestations were observed in areas where livestock concentrated at man-made water sources, though these infestations were not widespread.

Water is a limiting factor throughout the survey area and surrounding lands, with no perennial streams and all natural flow categorized as intermittent or ephemeral. The area is drained by Osborne Draw, Arapahoe Creek, and Lost Creek and their numerous tributaries. Osborne Draw flows east to west in the southern perimeter of the survey area. Arapahoe Creek and Lost Creek flow southwest along the western extent of the survey area; Arapahoe Creek flows through the northwestern corner of the JAB License/Permit Area. The creeks are seasonal, meandering streams with sandy soil substrates and intermittent riparian vegetation. In 2007, the portion of Arapahoe Creek that was inside the survey area was dry by mid-July. Lost Creek retained small, isolated pools of water until at least August 3rd of that year. Other water sources in the survey area include man-made ponds and seasonally operated wells. All of the water sources hold water for varying lengths of time, with natural flow occurring immediately after measurable precipitation or during spring snow melt. Snowfall is the sole water source for wildlife species during the winter months.

Weather conditions during the 2007 field surveys included high temperatures and low rainfall. Temperatures throughout the survey area in July and August 2007 hovered in the upper 90s for several weeks at a time with no measurable rainfall. Those extremes were followed by heavy snowfall and frequent spring rains in winter 2007/2008 and spring 2008, respectively. Consequently, wildlife species inhabiting the Antelope and JAB Survey Area during the survey period likely experienced varying degrees of stress due to these challenging climatic conditions.

Antelope License/Permit Area

The Antelope License/Permit Area is located approximately 10 miles west of the town of Bairoil and approximately 55 miles northwest of Rawlins, Wyoming in Sweetwater County. As described above, the area encompasses approximately 10,535 acres and

spans all or portions of 28 sections across T26N, R92 and 93W (Figure 3.5-3). Elevations range from approximately 7,189 to 7,300 feet above mean sea level. Topography is level to gently rolling, with numerous shallow drainages dissecting the area. An improved, well-traveled, gravel county road (# 22) bisects the license/permit area from east to west. Numerous unimproved dirt roads and two-track roads also cross the area.

JAB License/Permit Area

The JAB License/Permit Area is located approximately 15 miles west of the town of Bairoil and approximately 68 miles northwest of Rawlins, Wyoming in Sweetwater County, just west of the Continental Divide. The JAB area encompasses approximately 4,040 acres, and includes all or portions of 10 sections in T26N, R94W (Figure 3.5-4). Elevations range from approximately 6,680 to 7,176 feet above mean sea level. Topography is level to gently rolling, with a few shallow drainages dissecting the site.

3.5.5.3.3 Baseline Survey Results – Overview

No T&E species inhabit the Antelope and JAB Survey Area (License/Permit Area and surrounding perimeter). Although prairie dog colonies are present in the area, the USFWS has issued a block clearance for black-footed ferrets throughout the entire Antelope and JAB Uranium Project area, indicating that ferrets do not currently, and are not expected to, occupy that area.

Raptor nests were not observed inside the Antelope and JAB License/Permit Area during surveys conducted in 2007 and 2008 (Figures 3.5-3 and 3.5-4), nor were any nest sites found within two miles of the eastern (Antelope) portion of that area. Ten raptor nest sites (four intact and six previous nest records) were observed in the western (JAB) part of the survey area. Each nest site was at least 0.5 mile from the license/permit area (Figure 3.5-4), which is the distance recognized by the BLM as an adequate buffer between raptor nest sites and disturbance. The BLM had previously assigned identification numbers to 8 of the 10 nest sites in their database. The remaining two were artificial nest structures (ANS) built prior to 2007 but not yet assigned a BLM number. Two pairs of ferruginous hawks (*Buteo regalis*) nested in the JAB Survey Area in both 2007 and 2008.

Six occupied sage-grouse leks were monitored in the Antelope and JAB Survey Area during baseline and supplemental wildlife surveys conducted in 2007 and 2008, respectively. Two of the six leks were within the License/Permit Area: Harrier (Antelope area, Figure 3.5-3) and Arapahoe (JAB area, Figure 3.5-4). The remaining four leks were

all within the Antelope Survey Area (two-mile perimeter). One of the perimeter leks (A-1, Figure 3.5-3) was first documented during the 2007 baseline surveys. Sage-grouse leks were not present in the JAB survey perimeter (Figure 3.5-4). Grouse and/or fresh sign were observed at all six leks in both 2007 and 2008. Grouse and/or their sign were also documented throughout the Antelope and JAB Survey Area in spring and summer 2007 (Addendum 3.5-K). Grouse were not observed during limited winter surveys conducted in January and February 2008; those surveys occurred within the entire Antelope and JAB License/Permit Area.

Eight vertebrate BLM Sensitive Species were observed within the Antelope and JAB Survey Area during baseline wildlife surveys conducted in 2007. Seven of the eight species were documented within the license/permit area itself: the white-tailed prairie dog, ferruginous hawk, greater sage-grouse, sage thrasher (*Oreoscoptes montanus*), loggerhead shrike (*Lanius ludovicianus*), Brewer's sparrow (*Spizella breweri*), and sage sparrow (*Amphispiza billi*) (Addendum 3.5-L). Mountain plovers were not observed inside the license/permit area, but limited sightings of this species were made in the western part of the JAB survey perimeter. Five of the seven BLM Sensitive Species were known or presumed to breed in the license/permit area. Ferruginous hawks foraged throughout the entire survey area. As noted above, the nearest ferruginous hawk nest site was approximately 0.5 mile west of the JAB portion of the license/permit area, just beyond the distance determined by the BLM to be an adequate buffer from disturbance associated with drilling and mining operations.

Each of the seven avian BLM Sensitive Species observed in the Antelope and JAB Survey Area is also considered to be a USFWS Migratory Bird Species of Management Concern in Wyoming (Addendum 3.5-M). The bald eagle was the only other avian species of management concern documented in either the Antelope and JAB License/Permit Area or the surrounding survey area (one incidental sighting in the eastern portion of the survey area). Agency records, in combination with project-specific survey results, confirm that bald eagles do not regularly occur in the Antelope and JAB Survey Area, though the birds may travel through on occasion. The habitat within the survey area (license/permit area and surrounding two-mile perimeter) is not well suited for bald eagles due to the complete absence of trees, fisheries, sheep operations or other reliable food sources in the area.

The pygmy rabbit is not included on the current BLM Sensitive Species list for either the Lander or Rawlins Field Office (Addendum 3.5-L), but is a species of interest to that agency. Pygmy rabbits were not observed in the Antelope and JAB License/Permit Area during targeted surveys in 2007, nor were these rabbits seen during other wildlife surveys conducted in the survey area during 2007 or 2008. Potential pygmy rabbit habitat is

present along a number of sagebrush-lined seasonal creeks and larger tributaries throughout the license/permit area (Figure 3.5-3 and 3.5-4).

Eleven white-tailed prairie dog (*Cynomys leucurus*) colonies were mapped in the western (JAB) portion of the survey area in 2007 (Figure 3.5-4). Five of the 11 colonies overlap the JAB portion of the License/Permit Area. The colonies ranged in size from approximately 6.5 to 397 acres, for a combined total of 878 acres. Colonies in and around the license/permit area included both occupied and unoccupied sites in 2007.

The WGFD does not currently recognize any crucial big game habitats, critical migration corridors, or important parturition areas in or within 9 miles of the Antelope and JAB License/Permit Area (Figure 3.5-5 and 3.5-6). Pronghorn were the most common big game species observed during the 2007 baseline surveys. Herds were widely dispersed throughout the entire survey area from April through the end of May. In June, after the ground and water pools had dried out, water availability became a limiting factor and pronghorn began to concentrate around available livestock water and draws containing more succulent forage. The WGFD has classified the entire Antelope and JAB Survey Area (license/permit area and two mile perimeter) as winter-yearlong range for pronghorn.

A small herd of 11 elk was present during the spring and summer months of 2007 (the actual baseline survey period). Elk were seen as a single group and as smaller groups of three to five animals, with most observations in the survey perimeter rather than the license/permit area itself. Herd composition included bulls, cows, and yearlings. The WGFD has classified the license/permit area itself as "outside" range for elk (Figure 3.5-5and 3.5-6), which indicates that the area does not contain enough animals to be an important habitat, or the habitats are of limited importance to the animals. The only crucial winter/yearlong habitat is located in the extreme northeastern portion of the 10-mile elk analysis perimeter.

Mule deer were not observed in the Antelope and JAB Survey Area during wildlife surveys conducted in 2007 or spring 2008. The WGFD has classified the entire license/permit area as "outside" range for mule deer (Figures 3.5-5 and 3.5-6). No mule deer crucial winter/yearlong habitat is present within the two-mile analysis perimeter, though various seasonal habitats overlap that area.

Small bands of wild horses (*Equus* spp.) were often observed feeding and roaming within the Antelope and JAB Survey Area. While the horses shared the same areas (e.g., forage/watering sites) with big game species, no obvious conflicts were documented during the survey period.

Reptiles, amphibians, and aquatic species were not observed during baseline surveys conducted in 2007 and early 2008. Suitable habitat for various snakes and lizards is present in the survey area, though many turtle species would be limited by the lack of persistent water. The paucity of reliable water resources in the area also limits the potential for aquatic and semi-aquatic species to occur and thrive in the area.

3.5.5.3.4 Environmental Consequences – Overview

Proposed Action

In situ recovery operations vary from typical open pit mining by using less intrusive extraction methods that are more efficient and, thus, have less physical impact on the surrounding area. These recovery methods use a series of injection and extraction wells that mix oxygen and carbon dioxide with native groundwater to extract the uranium from the ore bodies. The recovery area then becomes a series of wells within a systematic pattern (well field) connected to one or more processing facilities to remove the uranium from the extract.

Initial disturbance within the Antelope and JAB License/Permit Area will consist of exploratory drilling within existing claims to determine the location and extent of ore trends. Existing claims encompass approximately 8,956 total acres (7,036 acres in Antelope and 1,920 in JAB), or 61% of the total license/permit area acreage. However, impact analyses were based on the potential for exploration drilling activities to occur anywhere within the entire Antelope and JAB License/Permit Area to account for scheduled and potential future operations in both existing and new claims, respectively.

Uranium One uses a single drill rig during exploration operations. Surface disturbance associated with each drill site consists of an area measuring approximately 15 feet by 25 feet, or 0.01 acre. Drill sites are typically spaced at regular intervals within each claim. Given the limited surface disturbance associated with each drill site, the maximum potential disturbance associated with exploratory drilling in the Antelope and JAB License/Permit Area would likely be no more than 20 non-contiguous acres (less than 0.001 % of the total license/permit area acreage) along with some limited potential disturbance from drill site access. Much of the drilling will occur in potential wellfield development areas. This type of disturbance will not result in large expanses of habitat being dramatically transformed from its original character as in other surface mining operations. Additionally, all drill sites will be reclaimed following either the completion of drilling or uranium recovery operations, depending on the location of, and results from, each drill site.

At present, and based on the results of exploratory drilling completed to date, Uranium One has divided the Antelope and JAB License/Permit Area into several development areas covering about 1,378 acres within the proposed license/permit areas.

Because in situ mining has a much smaller impact footprint than conventional surface mining, surface disturbance is reduced to relatively small areas needed for injection wells, extraction wells, processing facilities, and access roads. Eventual surface disturbance associated with the Antelope and JAB Uranium Project is expected to consist of a series of well fields and associated infrastructure (power lines, pipelines, and header sites) in each of wellfield development areas, a Central Plant Facility (10 acres, Antelope area), the JAB Satellite Facility (5 acres), and approximately 30 miles of roads (9 miles of improved existing roads and 21 miles of new roads). Approximately 24 miles (9 miles improved, 15 miles new) of road would fall within the Antelope License/Permit Area, with the remaining roads (all new) in the JAB area. However, most of the road development will be within existing wellfield disturbance areas. Approximately 10 miles of the total roads will be located outside of wellfield and facility areas. Assuming a working right-of-way of 25 feet for roads, the construction of new roads and improvement of existing roads would disturb a maximum of 30 additional acres within the overall license/permit area. Consequently, under full development, the Antelope and JAB Uranium Project could potentially disturb a maximum of 1,400 noncontiguous acres, or approximately 10% of the total acreage within the license/permit area. All disturbed areas would be reclaimed when the well fields are retired.

As with other energy extraction industries, ISR operations can have direct and indirect impacts on local wildlife populations. These impacts are both short-term (until successful reclamation is achieved) and long-term (persisting beyond successful completion of reclamation). Indirect impacts typically affect more than a single individual and often persist longer than direct impacts.

Direct, project-related impacts of ISR operations may be experienced by all wildlife species to varying degrees. Individuals may be injured or killed due to collisions with heavy drilling and/or construction equipment and related traffic. Topsoil stripping required for construction of drill pads, access roads, plant facilities, and other infrastructure may also result in injury and mortality to some wildlife species, particularly small and young burrowing species such as rodents and herptiles that have limited mobility to escape the equipment. The likelihood for impacts resulting in injury or mortality is greatest during the initial construction phase of each aspect of the project, when traffic is heaviest and machinery is actively disturbing new areas. Disturbance would also be greatest during construction of facilities and supporting infrastructure, which would require more equipment and cover a larger area.

Because few vertebrate species of concern occupy the Antelope and JAB License/Permit Area, the potential for direct impacts to those individuals during drilling exploration activities would be low. Sage-grouse would be at the greatest risk for direct impacts, as that species is known to breed in the area. Suitable habitat exists in the license/permit area for other uses (nesting, brood-rearing, etc.) by grouse, as well. No raptor nests were present within one-half mile (the standard BLM disturbance buffer) of the license/permit area in 2007 or 2008, though birds could forage there. No pygmy rabbits were documented in the area, though potential habitat is present. As indicated above, wildlife is a dynamic resource. However, the proposed operational annual monitoring should be adequated to evaluate impacts to wildlife populations and habitat.

Noise, dust, and human and mechanical presence would all be considered indirect effects. These elements can cause wildlife to avoid the disturbance area within their territories and/or result in their displacement into adjoining habitats. The latter result can negatively impact both the animals leaving the affected area as well as the population of animals upon which newly displaced individuals encroach. Because they are the most common of the species of interest, sage-grouse would also be most likely to experience indirect affects related to exploratory drilling. No raptor nests are present in or within one-half mile of the entire Antelope and JAB License/Permit Area, so nesting raptors would not be displaced or otherwise impacted by exploratory drilling in 2008; foraging raptors could potentially avoid the disturbance area. No crucial big game habitat is present in the license/permit area. Potential pygmy rabbit habitat is present, but no rabbits of this species have ever been documented in the survey area.

Overcrowding can result in increased competition for limited resources, which could result in starvation and/or dehydration. Increased stress associated with overcrowding can also lead to physical altercations, resulting in injuries or fatalities. Habitat alteration, fragmentation, and loss of cover and forage are expected to occur in varying degrees as a result of the proposed project. Wyoming big sage communities, the dominant habitat type in the survey area, can be difficult and time-consuming to reestablish. Consequently, pre-construction vegetation communities (i.e., shrub-steppe) may be different than post-construction communities (i.e., grass-dominated) for several years, or possibly decades, which could alter the composition and abundance of both plant and wildlife species in the area. Reclamation or regeneration of native shrubs species could be further hindered by year-long grazing pressure. Large ungulates (wild and domestic) are attracted to the more succulent and younger plants, and often concentrate in newly seeded locations during the critical early-growth stage.

No Action Alternative

Under the No Action Alternative, the Antelope and JAB Uranium Project would not be implemented and exploration drilling (and subsequent development) activities would not disturb any wildlife or wildlife habitat in the project area. Consequently, the impacts to wildlife associated with the proposed ISR operations described above would not occur. Impacts to wildlife and wildlife habitat associated with other existing and new energy projects would continue where those activities overlap the Antelope and JAB Survey Area. Furthermore, failure to allow exploratory drilling under this proposal would not preclude future leasing efforts.

3.5.5.3.5 Threatened, Endangered, Proposed, and Candidate vertebrate Species (T&E)

Affected Environment

The federally listed (T&E, candidate, proposed, petitioned) vertebrate species for Sweetwater County include the black-footed ferret, yellow-billed cuckoo (*Coccyzus americanus*), and four fish species. Due to the absence of trees and perennial water, the black footed ferret is the only federally listed vertebrate species included in the analysis for the Antelope and JAB Uranium Project. As noted above, surveys for black-footed ferrets were not required for this project due to the block clearance for ferrets issued by the USFWS in the survey area. Nevertheless, biologists watched for ferrets and their sign (tracks, scat, trenching) during each site visit to prairie dog colonies in the survey area.

Environmental Consequences

Proposed Action

Several occupied white-tailed prairie dog colonies are present in the Antelope and JAB Survey Area. However, no black-footed ferrets or their sign have ever been documented in that region of the state, including periodic wildlife surveys conducted from February 2007 through early May 2008. Furthermore, that area is not within the boundaries of potential ferret reintroduction areas (USFS 2002, Grenier 2003). Consequently, the Proposed Action will have no direct, indirect, or cumulative effects on black-footed ferrets. Should evidence of this species' presence be observed during any phase of the proposed project, Uranium One would immediately halt operations and contact biologists with the USFWS as well as the Lander and/or Rawlins BLM Field Offices for guidance.

No Action Alternative

Impacts to black-footed ferrets and other T&E species under the No Action Alternative would be the same as those described for wildlife species in general under the No Action Alternative overview assessment, above.

3.5.5.3.6 Big Game

3.5.5.3.7 Affected Environment

Beginning in 2000, the WGFD and Wyoming Department of Environmental Quality-Land Quality Division no longer required surface mining operations in Wyoming to conduct surveys for big game. The WGFD monitors big game populations throughout Wyoming, and those surveys completely overlap the Antelope and JAB Survey Area. Consequently, the BLM did not require big game surveys specifically for this project.

Big game distribution throughout a home range is influenced by a number of dynamic factors that include season of use, climatic extremes, habitat health and vigor, natural and man-made barriers, species demographics, and the degree of competition within and between species. As part of the analysis for this project, the BLM requested an assessment of big game ranges within 2.0 miles of the Antelope and JAB License/Permit Area for pronghorn and mule deer, and within 10.0 miles of that area for elk. Big game range classifications for the entire survey area are depicted on Figure 3.5-5 and 3.5-6, respectively.

Habitat classifications for big game ranges were established by the WGFD to identify seasonal use areas and crucial seasonal use areas inside a herd unit, or home range. Big game ranges present in the Antelope and JAB Survey Area are defined as follows:

Crucial (elk only): Any particular seasonal range or habitat component (often winter or winter/yearlong range) documented as a determining factor in a population's ability to maintain itself at a certain level (theoretically at, or above the population level objective) over the long term.

Spring/Summer/Fall: A population, or a portion of the population, of animals use the documented habitats within this range from the end of the previous winter to the onset of persistent winter conditions (variable, but commonly this period is between May 1 and November 30).

Winter: A population, or a portion of the population, of animals use the documented suitable habitat within this range annually during the winter (variable, but commonly between December 1 and April 30).

Winter/Yearlong: A population, or a portion of the population, of animals use the documented suitable habitat within this range on a year-round basis. During the winter months, the area experiences a significant influx of additional animals from other seasonal ranges.
Yearlong: A population, or a portion of the population, of animals use the documented suitable habitat within this range on a year-round basis. Exception: Occasionally, under severe conditions (as during periods of severe, inclement winter weather or droughts), animals may leave the area.

Outside: These areas, while part of a herd unit, do not contain enough animals to be an important habitat, or the habitats are of limited importance to the animals.

The WGFD has not identified any crucial big game habitats, critical migration corridors, or distinct parturition areas in the Antelope and JAB License/Permit Area (Figure 3.5-5and 3.5-6) to date. The license/permit area itself is classified as outside range for both mule deer and elk. The area and its entire two-mile perimeter are classified as winter/yearlong range for pronghorn. Consequently, pronghorn range is not depicted on these range maps.

With the exception of the far northeastern and northwestern corners, respectively, the two-mile perimeters for the individual Antelope and JAB license/permit areas are also considered outside range for mule deer (Figure 3.5-5and 3.5-6). The northeastern corner of the Antelope two-mile perimeter is a mixture of spring/summer/fall and winter/yearlong range for mule deer. The northwestern extent of the JAB two-mile perimeter is considered winter/yearlong range. Those small parcels of more suitable big game habitat typically overlap creeks or other range enhancements that result in improved vegetative conditions.

Similarly, the vast majority of the 10-mile perimeter for the Antelope and JAB License/Permit Area is considered outside elk range, with some pockets of other range types in the outer extents of that boundary. The only crucial big game habitat within 10 miles of the license/permit area is crucial elk winter/yearlong habitat, in the far northeastern portion of the 10-mile perimeter (Figure 3.5-5and 3.5-6).

Pronghorn

Pronghorn were the most common big game species observed during the 2007 and early 2008 surveys. Herds were widely distributed throughout the survey area from April through the end of May 2007. In June, after the ground and water pools had dried up, water availability became a limiting factor and pronghorn began to move to, and concentrate around, more dependable water sources such as livestock tanks, and to draws with more succulent forage. These observations were reported as routine annual behavior by BLM biologists working in the Antelope and JAB Survey Area for the last several years (Rawlins Field Office biologist, November, 2007).

The pronghorn is a browse species and sagebrush-obligate, using shrubs for both forage and cover. Pronghorn are indigenous to three primary habitats: sage-steppe, salt-brush steppe, and prairie lands. Sagebrush is the primary diet for pronghorn during the winter months, especially during periods of heavy snowfall when other browse plants are buried under snow. Their diet expands during the rest of the year to include more forbs and grasses, as these plants become available (Fitzgerald et al. 1994).

Pronghorn in the Antelope and JAB Survey Area belong to Wyoming's Red Desert Herd Unit (Herd Unit #615, Hunt Areas #60, 61, and 64). This Herd Unit is one of the largest in Wyoming, and one of five units that share the Great Divide Basin watershed. The WGFD's 2006 population estimate (most recent data available) for pronghorn in the Red Desert Herd Unit was 12,732 animals, approximately 15% below the population objective of 15,000 (Red Desert Pronghorn JCR Reports, WGFD, 2006).

Elk

A small herd of 11 elk was also present during the spring and summer months in 2007. The group was commonly observed moving through the northeastern portion of the survey area between March and April. The elk extended their range to include the central portion of the survey area from mid-April to the end of the summer survey period. The herd was most often observed as smaller groups of three to five animals, though the entire group was seen on several occasions. Herd composition included bulls, cows, calves, and yearlings of both sexes.

By nature, elk are shy animals that are less accepting of human disturbance than pronghorn (Fitzgerald et al. 1994). Elk in the Antelope and JAB Survey Area share their range with pronghorn and domestic cattle from spring through fall. Because elk prefer grass to shrubs, the resident herd competes more directly with domestic cattle and wild horses than with pronghorn in the spring and summer months.

The Antelope and JAB Survey Area spans three WGFD elk Herd Units: the Green Mountain herd (Herd Unit #638, Hunt Area #24) north of County Road 22, the Shamrock herd (Herd Unit #643, Hunt Area #118) south of the road, and the Steamboat herd (Herd Unit #426, Hunt Area #100) west of County Road 23 (locally referred to as the Sands or Desert herd). The latter road represents the junction of the three areas. The three local elk herds are in relatively close proximity to one another, and an unknown degree of interaction could exist among them. Consequently, the 11 elk occupying the survey area could belong to any one of those three Herd Units.

The WGFD's 2006 population estimates for the three Herd Units ranged from 130 (Shamrock Herd Unit) to 1,480 elk (Steamboat Herd Unit). Elk in all three units were above the population objectives that year. Population overages ranged from 11% (Green Mountain) to 73% (Shamrock), with an average of 36% above objective (Green Mountain, Shamrock, and Steamboat Elk JCR Reports, WGFD, 2006).

Mule Deer

Mule deer were not observed in the Antelope and JAB Survey Area in either 2007 or 2008. Likewise, no deer sign (droppings, tracks, fur) was encountered during pedestrian surveys conducted during that period.

Mule deer use nearly all habitats, but prefer sagebrush-grassland, rough breaks, and riparian bottomland. Browse is an important component of the mule deer's diet throughout the year, comprising as much as 60 percent of total intake during autumn, while forbs and grasses typically make up the rest of their diet (Fitzgerald et al. 1994). In certain areas of the state, this species tends to be more migratory than white-tailed deer traveling from higher elevations in the summer to winter ranges that provide more food and cover. However, monitoring indicates that mule deer are not very migratory in the vicinity of the Moore Ranch Project.

Mule deer in the Antelope and JAB Survey Area are part of four Herd Units: Chain Lakes (Herd Unit #650, Hunt Area #98); Sweetwater (Herd Unit #646, Hunt Area #96); Steamboat (Herd Unit #430, Hunt Area #131); and South Wind River (Herd Unit #644, Hunt Area #95). Unlike elk, mule deer were above their WGFD 2006 population objectives in only one of those four areas: Steamboat (16% over objective). Populations were approximately 5-23% below objective in the remaining three herd units that year, with the lowest percentage in the Sweetwater Herd Unit and the highest in the South Wind River Herd Unit (Chain Lakes, Sweetwater, and Steamboat, and South Wind River Mule Deer JCR Reports, WGFD, 2006).

3.5.5.3.8 Environmental Consequences

Proposed Action

Because they are more common in the survey area, pronghorn have the greatest potential for impacts under the Proposed Action. However, due to the timing of disturbance, and the limited scope and duration of drilling operations, most risks would be associated with the cumulative effects of additional, similar drilling and consequent development activities.

Animals could be displaced from portions of the Antelope and JAB License/Permit Area to adjacent lands due to drilling operations. Drilling during the fawning/calving season (May 1 to June 30 annually) could impact big game fawn/calf survival. Very young elk, deer, and pronghorn spend a great amount of time hidden in brush some distance from their mothers. These animals, by nature, do not move from their protective cover until called by their mother and, therefore, can be easily separated from the rest of the herd when fleeing from perceived danger. Equipment moving into an area could startle young animals and cause them to flee. The extended presence of machinery and human activity could discourage the females from returning to their young. Additionally, predation of young animals could result from their separation from their mothers. Impacts from winter drilling would be minimal, as most big game animals leave the portion of the Continental Divide that encompasses the survey area between December and the end of February each year (personal communications with local agency biologists and individuals, supported by Jones & Stokes' observations in winter 2007/2008).

Potential impacts to big game species from drilling operations and eventual resource development would be minimized by a variety of factors. For example, exploratory drilling operations are limited in scope and duration. Surface disturbance associated with each drill site consists of an area measuring approximately 15 feet by 25, with wellfield development drilling occurring in a systematic pattern throughout the Antelope and JAB License/Permit Area. Impacts to elk and mule deer would be further reduced by the fact that the WGFD has classified the entire Antelope and JAB License/Permit area as "outside" range for both species; no mule deer and few elk were observed in that area during baseline wildlife surveys. No areas classified as crucial pronghorn habitat occur on or within at least 2 miles of the license/permit area. Because wellfield development drilling would occur sequentially, displacement would happen slowly, allowing animals time to acclimate to or gradually move away from active drill sites. Potential impacts to fawns would be reduced in areas within the license/permit area that overlap the two-mile perimeter around active sage-grouse leks, as no activity occurs in those buffer areas from March 1 through June 15. Additionally, drilling activity would occur only during daylight hours, which would reduce the chances of fawns being left unattended overnight.

Orphaned juveniles left unclaimed overnight would be reported to the WGFD in an expedient manner. These efforts would minimize the project-related impacts to pronghorn, elk, and deer. Focusing drilling activity from late summer through the winter months, when fewer big game animals are present, would further mitigate direct impacts to big game species. Once construction of facilities is complete, disturbance levels during actual ISR operations would consist primarily of vehicular traffic on improved and unimproved (two-track) roads throughout the survey area.

No Action Alternative

Under the No Action Alternative, exploratory drilling and operations associated with the Antelope and JAB Uranium Project would not be implemented. Consequently, no impacts to big game animals or their habitat related to those drilling operations would occur under this alternative.

3.5.5.3.9 Pygmy Rabbits (Brachylagus idahoensis)

Although pygmy rabbits are thought to occur throughout most of the Great Basin, BLM Lander Field Office biologists indicated that surveys targeting this species had not been previously conducted in the Antelope and JAB Uranium Project area. Surveys for pygmy rabbits and potential habitat were included in the wildlife baseline surveys within the license/permit area at their request.

Pygmy rabbits are secretive and difficult to observe, thus, familiarity with their habitat and sign is important in locating populations. These rabbits utilize underground burrows for cover. Two main features of their habitat include relatively tall (1.5 to 7 feet) and dense (i.e., greater than 30% cover) big sagebrush, and deep soils. In Wyoming, pygmy rabbits occur in swales of taller, denser sagebrush in a setting of low to moderate hillsides that include thinly distributed shorter sage. These thicker sage stands are often less heavily grazed, with more standing dead sagebrush and more Great Basin big sage (*Artemisia tridentata tridentata*) (Katzner, personal communication). The general areas used by pygmy rabbits have evenly distributed, taller, and more structurally diverse sagebrush with a dense canopy. Three subspecies of big sagebrush can be present, Wyoming, Great Basin, and mountain (*A. t. vaseyana*). Surrounding areas unused by pygmy rabbits have fewer, shorter, shrubs with less vegetative cover.

Affected Environment

Pygmy rabbit surveys were conducted throughout the entire license/permit area in July 2007. Additional winter surveys were conducted in the eastern (Antelope) portion of the license/permit area in December 2007 and January 2008; the western (JAB) portion was inaccessible during those times due to deep snow drifts. Potential pygmy rabbit habitat within the Antelope and JAB License/Permit Area was mapped during the July 2007 surveys (Figure 3.5-3 and 3.5-4). The UTM coordinates for those habitat areas are provided in Appendix 2. These are the only documented survey efforts for pygmy rabbits and their habitats conducted within the license/permit area, to date.

Potential Pygmy rabbit habitat within the Antelope and JAB License/Permit Area is limited to shallow draws that support robust, densely spaced stands of Wyoming big sagebrush (Figure 3.5-3 and 3.5-4). Soils in the draws are predominantly sandy loam. These draws support a number of burrowing small animal species, as evidenced by the number of burrows, tracks, and droppings present there. However, no pygmy rabbits or confirmed sign were observed in the license/permit area during the targeted surveys, or incidental to other wildlife surveys conducted there during 2007 and 2008.

Environmental Consequences

Proposed Action

Given the limited baseline data available for pygmy rabbits within the Antelope and JAB License/Permit Area, impacts resulting from the proposed drilling operations cannot be fully evaluated at this time. However, habitat assessments and mapping in that area indicate that potential pygmy rabbit habitat is quite limited, and exists only in a few narrow draws scattered throughout the area. Additionally, no pygmy rabbits or confirmed sign were observed in the license/permit area during the targeted surveys, or incidental to other wildlife surveys conducted there during 2007 and 2008. Therefore, no impacts to pigmy rabbits is anticipated from exploration drilling or operations. Impacts to potential habitat areas could be limited by minimizing new disturbance in these mapped areas, including cross-country travel between drill sites to the extent possible. This approach would preserve the potential habitat itself, as well as opportunities for future survey efforts. If pygmy rabbits are observed at any time during the course of the drilling project, operations would be temporarily halted and the Lander or Rawlins BLM wildlife biologists would be contacted. As indicated above, additional data are needed to more fully assess impacts to this species.

No Action Alternative

Under the No Action Alternative, exploratory drilling associated with the Antelope and JAB Uranium Project would not be implemented. Consequently, no impacts to pygmy rabbits or their habitat related to those operations would occur under this alternative.

3.5.5.3.10 Other Mammals

Affected Environment

A variety of small and medium-sized mammalian species occur in the Antelope and JAB Survey Area, although not all were observed on the License/Permit Area itself during the baseline wildlife surveys. These include predators and furbearers such as the coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), and badger (*Taxidea taxus*). Although the WGFD classifies jackrabbits (*Lepus* spp.) as a predator in Wyoming, they serve as prey in the biological food chain. The coyote was the most common non-big game mammal observed in the Antelope and JAB Survey Area. Coyotes and their sign were present in shallow draws through robust stands of Wyoming big sage in the eastern portion of the survey area. In the western part of the area, coyotes were observed along Arapahoe Creek and Lost Creek in the early mornings during spring and early summer months, when the streams were holding fresh water and prey species were common; fox and raccoon tracks were also present in this area. Sightings and tracks became less frequent as the summer progressed and water sources dried up, suggesting that several coyotes had moved outside the survey area to better hunting grounds during the latter part of the year. Bobcat and fox tracks were seen in fresh snow in the south-central and southeastern portions of the study area, respectively.

Prey species recorded in the survey area included various rodents (such as mice, rats, voles, gophers, ground squirrels, chipmunks, prairie dogs), jackrabbits, and cottontails [*Sylvilagus* spp.]. These species are cyclically common and widespread throughout the region, and are important food sources for raptors and other predators. Each of these prey species, with the exception of chipmunks and rats, were either directly observed during the field surveys, or were known to exist through burrow formation or scat. Jackrabbit sightings were notably rare and cottontail sightings were below normal, suggesting these species are currently in a local downward trend. Observations of small mammals occurred most often near Arapahoe and Lost Creeks, in the western portion of the survey area.

White-tailed prairie dogs are considered to be a BLM Sensitive Species in both the Lander and Rawlins Field Offices, and a non-game species by the WGFD. This species will be discussed in more detail in the *BLM Sensitive Species* Section 3.5.5.3.12.

Other species such as the striped skunk (*Mephitis mephitis*) and various weasels (*Mustela* spp.) inhabit sage-steppe communities, but no sightings or confirmed scat were recorded for these species during the surveys. Few bats have historically been recorded in the survey area (Cerovski et al. 2004), and bats have limited potential habitat in the vicinity.

Two Wild Horse Management Areas (HMAs) overlap the Antelope and JAB Survey Area: Green Mountain and Stewart Creek. The BLM's population objectives (a.k.a., appropriate management level) for those HMAs are 300 and 150, respectively. Horses regularly move between the two HMAs, so it is difficult to know which herd is present in the area at a given time. Wild horses were often seen in the same foraging and watering areas as various big game species, but no obvious conflicts were observed.

Environmental Consequences

Proposed Action

Direct losses of some medium and small mammal species may be higher than for other wildlife due to their generally more limited mobility and the likelihood that some individuals and species would retreat into burrows when disturbed, and thus be impacted by topsoil scraping or staging activities. Some animals could be injured or killed by increased traffic in the survey area associated with drilling and maintenance crews. Potential direct impacts from scrapers and other habitat disturbance would be greatest during the breeding season, when medium and small mammals still have young in underground dens and burrows. An unknown number of the local population of medium-sized mammals discussed above would be temporarily displaced to other habitats during the drilling activities. Displacement would negatively affect these animals by increasing resource competition in the habitat where the animals relocate, both for resident and displaced individuals. Predation rates on displaced animals could also increase temporarily due to their increased exposure as they search for new sources of food, water, and cover. Species such as coyotes, bobcats, and foxes would be least affected by drilling activities due to their mobility and general adaptability. Injury and mortality could be greatest in mammal species that, by nature, escape danger by retreating into their burrows.

Given the limited area expected to be disturbed by the Antelope and JAB Uranium Project during the drilling process, and the relatively slow and systematic drilling pattern, such impacts would not be expected to result in major changes or reductions in mammalian populations for small or medium-sized animals. The species known to be, or potentially, present in the project area are common, and have shown an ability to adapt to human disturbance in varying degrees, as evidenced by their presence in other energy

developments and residential areas of similar, or greater, disturbance. Additionally, small mammal species in the area have a high reproductive potential and tend to re-occupy and adapt to altered and/or reclaimed areas quickly. Conducting work only during the daylight hours would further reduce impacts by allowing adults an opportunity to relocate young to alternate dens under cover of darkness.

Wild horses are extremely mobile and have large home ranges. The herds in the Antelope and JAB Survey Area are currently exposed to various levels of vehicular travel on the web of public roads and two-tracks in the area, as well as previous and current energy extraction activities. Given their large size, their tendency to travel together, their mobility, and the scope and duration of proposed disturbance activities, wild horses are not likely to experience negative impacts from drilling operations.

No Action Alternative

Under the No Action Alternative, exploratory drilling associated with the Antelope and the JAB Uranium Project would not be implemented. No impacts to medium or small mammals or their habitats would occur under this alternative.

3.5.5.3.11 Raptors

Affected Environment

Raptor species observed during the baseline wildlife surveys included the bald eagle (one incidental sighting), red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), and American kestrel (*Falco sparverius*). Bald eagles are primarily migrants and winter residents in much of Wyoming. As no trees are present in the Antelope and JAB Survey Area, this species is not expected to nest or establish winter roosts there. Additional information regarding bald eagles is presented in the *Other Migratory Bird Species of Concern* section, below. Other raptor species that could occur in sagebrush-steppe habitats but were not seen during the 2007 inventory included the Swainson's hawk (*Buteo swainsoni*), prairie falcon (*Falco mexicanus*), great horned owl (*Bubo virginianus*), burrowing owl (*Athene cunicularia*), and short-eared owl (*Asio flammeus*).

Raptor sightings were recorded frequently throughout the Antelope and JAB Survey Area during 2007. However, observations were most concentrated in proximity to Lost Creek and Arapahoe Creek in the western portion of the survey area during early spring, perhaps because of prey availability due to the presence of water and better vegetative cover along those drainages. Raptors were observed hunting, perching on power poles

and topographic features, watering at livestock troughs and in puddles on dirt roads, and feeding on carrion and fresh kills. The ferruginous hawk, American kestrel, and northern harrier were the most commonly seen species in the area. Both adult and sub-adult ferruginous hawks and golden eagles were recorded.

During baseline surveys conducted in 2007, raptor sightings were first recorded with regularity in early April. Observations increased as the spring progressed, peaking in mid-May. No raptors were seen during the December, 2007 and January, 2008 ground surveys. Although biologists were not on-site on a daily basis, surveys spanned several months and all four seasons. Those observations, in combination with historic information from agency biologists and local residents, indicate that raptors do not remain in the Antelope and JAB Survey Area on a year-round basis.

Historically, raptors in the survey area nested on three substrates: creek banks, artificial nest structures (ANS), and on the ground along sage draws or at the base of well-established sagebrush. As described in the *Baseline Survey Results-Overview* section, above, no raptor nests were observed within the entire Antelope and JAB License/Permit Area during baseline surveys conducted in 2007 or follow-up monitoring in 2008 (Figure 3.5-3and 3.5-4). Furthermore, no raptor nests were found within one mile of the eastern (Antelope) portion of the survey area during those efforts.

JAB License/Permit Area

Ten raptor nest sites have been documented along the western outskirts of the JAB Survey Area over time (Figure 3.5-4). Eight of those 10 nest sites were previously numbered by the BLM and/or WGFD. Two ANS monitored during the 2007 baseline surveys (Table 3.5-21) were given temporary numbers (JAB-1 and JAB-2). All 10 nests are more than one-half mile outside of the license/permit area boundary, and several are beyond line-of-sight of proposed drilling activities. The two ANS are more than 1 mile beyond that border, but were included because they were monitored during other surveys that included a larger survey perimeter and the results of those efforts are believed to be worth including in this document. A distance of 0.5 mile from ongoing or potential disturbance activities is considered by the BLM to be an adequate buffer between nest sites and disturbance for the raptor species known to nest in the area. Only 4 of the 10 nest sites were intact (i.e., nest material present) during the 2007 and 2008 surveys.

Table 3.5-21 Raptor nest locations[1], status, and productivity in the Antelope and JAB License/Permit Area in 2007 and 2008.

BLM ID[2]	Species[3]	Sub[4]	¼	¼	Section	Township	Range	Nest Status & Productivity[5]	
								2007	2008[6]
JAB-1	FEHA	ANS	SE	SW	5	26N	94W	INAL	Raven ACTI
JAB-2	FEHA	ANS	NW	NE	5	26N	94W	A,2,2	ACTI
2176	FEHA	GHS	SW	SW	17	26N	94W	---	---
2177	FEHA	GHS	SW	SW	17	26N	94W	---	---
2178	FEHA	CKB	NE	NW	17	26N	94W	A,2,2	INAL
2179	FEHA	CKB	NE	NW	17	26N	94W	INAL	ACTI
2180	FEHA	GHS	SE	NW	17	26N	94W	---	---
2181	FEHA	GHS	NW	SE	29	26N	94W	---	---
2182	FEHA	GHS	NE	SW	29	26N	94W	---	---
2183	FEHA	GHS	NE	SW	29	26N	94W	---	---

[1] Nest UTMs provided in Appendix A. All nests are at least 0.5 mile beyond the License/Permit Area.
[2] Nests without assigned BLM ID numbers were discovered during baseline surveys.
[3] FEHA = Ferruginous hawk
[4] Nest Substrate Codes: ANS = Artificial nest structure; CKB = Creek bank; GHS= Ground Nest
[5] Nest Status Codes
X,#,# = Status, number of young hatched, number of young fledged.
A/ACTI = Active (eggs, young, incubation)
INAL = Inactive nest in territory with active nest
--- = Nonexistent or undiscovered
[6] Nest status as of mid-June 2008.

In 2007 and 2008, raptors in the JAB survey area were observed nesting in natural and man-made nest structures (Table 3.5-21). Each of the six historic nesting locations originally recorded on the ground along sagebrush draws were no longer visible. The absence of nest debris at these nest locations suggested that they had been unoccupied for some time. These sage draws had been used by cattle and, to a lesser extent, wild horses and large game species for relief from insects and for shelter during weather extremes. Vegetation had been rubbed against and trampled to the degree that, over a period of time, much of the robust sage was either damaged or decadent.

Environmental Consequences

Proposed Action

No raptor nests were present within the boundaries of the Antelope and JAB License/Permit Area itself during 2007 or 2008.

Raptor Nest Sites - Antelope License/Permit Area

No nests were present in or within 1 mile of the eastern (Antelope) portion of the combined license/permit area in 2007 or 2008. Therefore, drilling operations would not affect nesting raptors in that area during 2008, either locally or on a regional scale. Should drilling activities extend into the 2009 breeding season, additional surveys for active raptor nests would need to be conducted to determine whether new nests are present and what, if any, action would be necessary to preclude negative impacts on active nest sites.

Raptor Nest Sites - JAB License/Permit Area

The presence of historic and recently active raptor nests in the JAB survey area demonstrates that at least the western survey perimeter contains suitable raptor nesting habitat. However, all nest sites (intact and former sites) are 0.5 mile or more from the license/permit area itself. As a result, all drilling activities conducted within the JAB license/permit area in 2008 would meet the current BLM spatial stipulations of 0.5 mile for active raptor nests. That spacing is considered by the agency as adequate to prevent negative impacts to nesting raptors. Should drilling operations extend into the 2009 breeding season, additional surveys would need to be conducted to identify and address any new nesting issues prior to advancing into previously undisturbed locations. The need for implementation of timing or spatial stipulations, and/or mitigation measures would also be addressed at that time.

Raptors – General Overview

Aside from affecting active raptor nests, potential direct impacts to raptors include injury or mortality due to collisions with equipment or vehicles associated with drilling or future ISR development operations. Should disturbance be located within an active raptor territory, foraging birds may avoid the disturbance area due to increased noise and/or the presence of physical activities. This could result in either reduced foraging opportunities

within a given territory or increased competition between birds from adjoining territories, as described previously. Both outcomes could negatively impact nesting success. Non-nesting raptors might also be discouraged from foraging in areas of active disturbance, with similar results.

Although present, these potential impacts to foraging raptors would be mitigated by the following factors: all drilling and activities would occur at least 0.5 mile from the nearest active raptor nest; agency prescription and use of that distance suggests that it is considered adequate to minimize potential negative impacts on nesting raptors; a significant percentage of the drilling operations would occur during the non-breeding season; the nature and duration of drilling operations at a given location is relatively minor and short-lived, respectively; access to drill sites would use existing roads to the extent possible; and total disturbance over the entire Antelope and JAB License/Permit Area is expected to be less than 20 non-contiguous acres, or less than 0.001% of the total license/permit acreage (along with some limited potential disturbance from drill site access). Additionally, equipment staging yards associated with drilling and mining operations often provide habitat for prey species such as cottontails, and raptor have been documented voluntarily nesting and foraging quite near those areas under similar circumstances at other surface mine and ISR operations elsewhere in Wyoming.

As at other surface mines throughout the region, including other uranium projects in Wyoming, nesting raptors in the Antelope and JAB Uranium Project area have likely been influenced primarily by natural factors such as prey abundance and availability of nesting substrates. Due to the paucity of woody vegetation and river cliffs, raptors that nest in trees or on high cliffs are not as abundant as those that either nest on the ground or are adaptable to nesting on mine facilities or other man-made structures (platform nests, windmills, etc.). During active mining, new nesting habitat can be created through enhancement efforts (e.g., nest platforms and boxes) to mitigate future negative impacts that might be associated with the project.

The proposed drilling action taken alone is not likely to result in a loss of viability to the local raptor population. Potential risks would be associated with the long-term, cumulative effects of additional, similar drilling and consequent ISR activities. However, even full development of the proposed future operations would impact only about 10% of the total acreage within the Antelope and JAB License/Permit Area. Although some impacts would be associated with that development, a substantial amount of acres would remain undisturbed. As noted above, wildlife is a dynamic resource. As part of the ultimate licensing/permitting action, searching for and monitoring raptor nests would continue in the survey area for the life of the project. New raptor nests documented in the area would not necessarily halt the project, but would require adherence to federal and state regulations/stipulations pertinent to raptor species.

No Action Alternative

Under the No Action Alternative, exploratory drilling and ISR operations associated with the Antelope and JAB Uranium Project would not be implemented. Therefore, impacts to raptor species would be similar to those described for wildlife species in general under the No Action Alternative overview assessment, above.

3.5.5.3.12 BLM Sensitive Species

Appendix B lists 30 terrestrial vertebrates recognized as Sensitive Species by the Lander and/or Rawlins BLM Field Offices for the Antelope and JAB Uranium Project. All BLM Sensitive Species were given initial consideration for analysis. However, numerous species were not evaluated further because of an obvious lack of appropriate habitat within or near the license/permit area, because their ranges do not overlap the survey area, or because no known or potential habitat for a given species would be physically disturbed or otherwise affected by implementation of the Proposed Action.

For example, fish habitat includes perennial and intermittent streams, springs, and flat water (lakes and reservoirs) that support fish through at least a portion of the year. No perennial or permanent water sources are present in the Antelope and JAB survey area, and even the largest intermittent streams were dry by mid-July or early August during the baseline period. Therefore, all sensitive fish species were excluded from the analysis. Likewise, all other water or wetland-associated species were excluded because the entire project will occur in upland, primarily sagebrush-dominated habitat, or because no suitable staging or overwintering habitat (deeper, persistent pools) is present to support migrating species or sustain populations year-round. Those species included the white-faced ibis [*Plegadis chihi*], trumpeter swan (*Cygnus buccinator*), and three of the four amphibians. Species requiring or relying heavily on forested and other woodland habitats were also eliminated due to the lack of such features in the survey area, including the northern goshawk (*Accipiter gentilis*) and yellow-billed cuckoo. Peregrine falcons (*Falco peregrinus*) could migrate through the area. However, no peregrines have been recorded in the survey area by agency biologists, and the lack of tall cliffs and rivers makes it unlikely that this species would linger there for any length of time. Consequently, peregrine falcons were not evaluated further for the Antelope and JAB Uranium Project. Due to the lack of vast grasslands and/or meadows (including wet, loose soil) and the predominance of shrublands in the survey area, species such as the swift fox (*Vulpes velox*), Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*), Baird's sparrow (*Ammodramus bairdii*), long-billed curlew (*Numenius americanus*), and Wyoming pocket gopher (*Thomomys clusius*) were also excluded from detailed analysis. The larger prairie dog colonies, some drainage bottoms, and areas of

less dense sagebrush within the survey area could provide limited foraging habitat for some migrating birds, but these species are not likely to regularly nest in or occupy the area for extended periods.

The Great Basin spadefoot (*Spea intermontana*) could possibly survive the arid conditions by burrowing deep into the soil but, as noted above, the lack of planned disturbance in known or potential wetland habitats and the general paucity of persistent water sources (necessary for breeding) in the survey area preclude the need for evaluating impacts to this species. The eastern extent of the Antelope and JAB Survey Area falls within a region where black-tailed prairie dogs or Columbian sharp-tailed grouse could occur (i.e., Rawlins Field Office jurisdiction). Nevertheless, neither species has been documented in the Antelope and JAB License/Permit Area or surrounding survey perimeter. No evidence of black-tailed prairie dog burrows was observed in that area during surveys conducted in 2007 or early 2008. Other species could occasionally occur in the survey area, including wolves (*Canis lupus*), grizzly bears (*Ursos arctos*), and some bats, but those species are more often associated with forests and/or perennial water and, thus, do not inhabit the Antelope and JAB Survey Area. None of those species were evaluated further for this project.

Affected Environment

Eight vertebrate BLM Sensitive Species were observed within the Antelope and JAB Survey Area during baseline wildlife surveys conducted in 2007. Seven of the eight species were recorded in the License/Permit Area: the white-tailed prairie dog, ferruginous hawk, greater sage-grouse, sage thrasher (*Oreoscoptes montanus*), loggerhead shrike (*Lanius ludovicianus*), Brewer's sparrow (*Spizella breweri*), and sage sparrow (*Amphispiza billi*). Mountain plovers were not documented inside the license/permit area itself, but limited sightings of this species were made in the western part of the JAB survey perimeter. Six of the eight BLM Sensitive Species observed during baseline surveys were known or presumed to breed in the license/permit area. Two mountain plovers were seen on multiple occasions in the western portion of the JAB Survey Area during spring 2007, but no evidence (defensive behavior, nests, young) of nesting was observed. Ferruginous hawks foraged in the license/permit area, but the nearest nest site was approximately 0.5 mile west of the JAB boundary. Ferruginous hawks were discussed in the previous *Raptors* section. The remaining seven species are described below. Burrowing owls were not observed during the baseline wildlife surveys, but they could occur in the area and are included in the following discussion.

White-tailed Prairie Dog (Cynomys leucurus)

Eleven prairie dog colonies are present in the Antelope and JAB Survey Area, though they are limited to the western (JAB) portion of the area (Figure 3.5-3and 3.5-4). Six colonies are within or overlap the JAB License/Permit Area, and the remaining five are located within 0.25 to 1.25 miles of that boundary (Figure 3.5-4). In 2007, the colonies ranged in size from 6.5 to 396.6 acres, and covered a total of approximately 878 acres. Most of the colonies were occupied that year, with the status of the smaller sites uncertain. As noted previously, no black-footed ferrets have ever been documented in the Antelope and JAB Survey Area or surrounding region, and the area is not within the boundaries of potential ferret reintroduction areas (USFS 2002, Grenier 2003). The largest colony in the JAB area has an existing two-track road traversing its entire length from east to west. Two other colonies straddle or are adjacent to existing two-track roads.

Greater Sage-grouse (Centrocercus urophasianus)

The greater sage-grouse is a species of great concern throughout the west, and is considered a "landscape species" due to its use of wide expanses of sagebrush as primary habitat during each phase of its life cycle. Sage-grouse in Wyoming are regulated by the WGFD, but are recognized both as a BLM Sensitive Species and as a *Migratory Bird Species of Management Concern in Wyoming*. Concerns remain regarding sage-grouse population status, trends, and various impacts to the health and vigor of existing sagebrush habitat throughout the state. Since 1999, the USFWS has received several petitions requesting that the greater sage-grouse be listed as threatened or endangered under the Endangered Species Act. That agency is currently conducting another assessment of this species' status to determine whether or not it is warranted for listing.

The greater sage-grouse is a yearlong resident in southwest Wyoming, and has been documented in the Antelope and JAB Survey Area since the late 1970s (Rawlins WGFD biologist, personal communication, April, 2007). The WGFD and BLM consider the breeding and nesting period for this species to extend from February 1 through July 30 (Lander BLM Field Office Oil and Gas Wildlife Stipulations).

Grouse were regularly observed throughout the entire Antelope and JAB Survey Area during the primary baseline survey period from April 7 through early August 2007. Conversely, results from limited winter surveys in February, March, and December 2007 and January 2008 suggest that fewer sage-grouse were present in the area during those months. Based on conversations with various local residents, the common belief is that sage-grouse move out of the area after the first measurable snowfall in early December. However, it is possible that grouse remain in the vicinity during winters with lesser

snowfall; the limited available data do not provide conclusive evidence for either possibility.

Greater sage-grouse lek surveys were completed between April 7 and May 12, 2007. Those survey efforts were conducted in collaboration with biologists from the Rawlins office of the WGFD and the Lander BLM Field Office, and followed applicable survey protocols issued by those agencies. Surveys were conducted at 7- to 10-day intervals, and occurred between first light and approximately one hour after sunrise. Biologists searched for displaying grouse by driving through the survey area, and making frequent stops at vantage points separated by less than one-mile intervals to scan and listen for strutting birds. Known leks were observed according to WGFD and BLM protocols; lek searches were not conducted outside the accepted time window or during inclement weather. Male birds observed outside the survey time frame were recorded and biologists returned to these sites another day to complete the surveys according to protocol.

Antelope License/Permit Area

Five sage-grouse leks were monitored in the Antelope Survey Area (Figure 3.5-3) during 2007 and 2008. The Harrier Lek was the only site located inside the license/permit area itself. The lek site is immediately adjacent to the well-traveled County Road 22. Four additional leks were observed in the two-mile perimeter around the Antelope license/permit area. One of the four leks (A-1) had not been recorded prior to the baseline wildlife surveys for Antelope and JAB Uranium Project. Grouse at the Harrier and Upper Osbourne Leks adjacent to the county road were tolerant of vehicular traffic and human presence. Birds at the more isolated leks (e.g., Sand Gully, A-1) were notably less tolerant of those elements. Grouse from the Harrier, A-1, and Upper Osbourne leks were occasionally observed strutting at satellite lek locations located within 0.5 mile of their primary display grounds.

Appendix A provides the lek locations and peak counts for males and females during 2007 and 2008, as well as a list of incidental grouse sightings made throughout the survey period. Peak male counts ranged from 68 to 125 in 2007 and from 56 to 77 in 2008. Fewer than 15 hens were observed at a given lek in either year. Weather conditions during spring 2008 may have affected the counts that year. The spring was plagued by persistent inclement weather and impassable roads due to snow and heavy rainfall, which made it difficult to maintain the preferred timing interval between lek checks.

Incidental sightings consisted of adult hens in groups of 4 to 13 birds. The majority of observations occurred in the early to mid-morning hours when the temperatures were cooler. Most birds were located in stands of robust sagebrush located in the numerous, shallow drainages interspersed across the survey area. Observed concentrations of

bleached grouse droppings were present along spans of drainages with hearty sagebrush communities, suggesting the use of those draws for roosting and foraging. One grouse nest containing three eggs was discovered on May 3, 2007, with seven adult females nearby. The nest was in a sagebrush draw in NE¼ NE¼ Section 15, T26N, R92W in the Antelope portion of the license/permit area.

JAB License/Permit Area

One lek is known to exist within the JAB Survey Area (License/Permit Area and two-mile perimeter) (Figure 3.5-4). The Arapahoe Lek is a previously recorded lek site situated on a gentle southeast-facing slope in a bud sage plant community. The lek is not adjacent to well-traveled roads but is in proximity to an established two-track road. New leks were not observed in the survey area in 2007 or 2008. Appendix A provides the lek locations and peak counts for males and females during the survey period, as well as a list of incidental grouse sightings in the survey area.

Peak male counts at the Arapahoe lek were 98 in 2007 and 85 in 2008. Fewer than 10 hens were observed on leks in either year. As described above, weather conditions during spring 2008 may have affected the counts that year. Grouse were not observed at satellite or other alternate lek sites in the JAB Survey Area.

Incidental sage-grouse observations outside leks were relatively common during spring 2007 (Addendum 3.5-K). These sightings consisted of both males and females, with group size ranging from 7 to 27 birds. The majority of incidental sightings occurred in the early to mid-morning hours when the temperature was cooler, though birds were observed at all times of the day. Most observations occurred in stands of robust sage in and along shallow drainages present throughout the survey area. Concentrations of bleached grouse droppings along some of the shallow drainages indicated that grouse used those areas while roosting and foraging.

Mountain Plover (Charadrius montanus)

Mountain plovers are summer residents in the general vicinity of the Antelope and JAB Survey Area (Cerovski 2004). However, no agency records are on file documenting plovers inside the proposed license/permit area.

Antelope License/Permit Area

Preferred mountain plover habitat is limited in this portion of the survey area and consists primarily of disturbed oil and gas development sites, gently sloping barren escarpments, and low areas with alkali soil and associated vegetation. The Antelope license/permit

area and surrounding perimeter do not include any occupied or unoccupied prairie dog colonies. The project area is dominated by sagebrush communities with few sizeable openings of short and sparse vegetation.

JAB License/Permit Area

The JAB survey area is partially composed of bud sage communities that include patches of bare ground between plants. Occupied and unoccupied white-tailed prairie dog colonies are widely situated throughout the area, including two sizeable colonies of more than 100 acres each (Figure 3.5-3). Mountain plovers were observed in the JAB Survey Area on six occasions during 2007 (Table 3.5-22). All sightings occurred in or immediately adjacent to white-tailed prairie dog colonies located outside of the license/permit boundary. Five of the six observations were paired birds, with one single bird. The BLM had no records of mountain plovers in the immediate vicinity of the survey area prior to the baseline wildlife surveys conducted for this project in 2007.

Table 3.5-22 Mountain Plover Locations in the JAB Survey Area in 2007

Date	#	Age	UTM (NAD 83) Zone/Easting/Northing	Legal Township/Range/Section	Habitat
5-12-07	2	Adult	12_740928/4673441	26/94/SWSW 32	Arsp/PDC
5-15-07	2	Adult	12_743752/4681021	26/94/NESE 10	Arsp/PDC
5-24-07	2	Adult	12_743314/4680692	26/94/S½ NE 9	Arsp/PDC
6-24-07	1	Adult	12_741034/4680738	26/94/NESE 8	Arsp/PDC
6-24-07	2	Adult	12_741613/4676287	26/94/NWNE 29	Arsp/PDC
6-25-07	2	Adult	12_747255/4677498	26/94/NWSW 23	Arsp/PDC

Arsp: *Artemisia spinescens* = Bud Sage
PDC: Prairie dog colony

Other BLM Sensitive Species (Lander and/or Rawlins Field Office)

Brewer's sparrows prefer to nest in medium sized (19-35 in) live sagebrush within relatively dense (26-42 percent canopy cover) stands (Walker 2004). Grass height and density are important factors for nest concealment. Suitable Brewer's sparrow nesting and foraging habitat is present in the moderately dense stands of sagebrush that are scattered

throughout the entire survey area. These stands possess a desirable understory of native grasses and forbs. Brewer's sparrow nests were not observed in the Antelope and JAB License/Permit Area during the 2007 baseline surveys. However, this species was documented in the surrounding perimeter on four occasions during the survey period. One Brewer's sparrow was observed in the far southeastern perimeter of the survey area, and three individual sightings were recorded in the western portion of the survey perimeter. All four observations consisted of single birds perched on robust sagebrush in the area. These limited sightings do not allow for an accurate estimate of the presence and abundance of nesting pairs but, given the predominance of suitable habitat in the survey area, it does suggest a breeding population is present.

Loggerhead shrikes prefer relatively open, heterogeneous habitats characterized by grasses and forbs of low stature interspersed with bare ground and shrubs or low trees with perches for hunting. This species will use a wide variety of trees and shrubs, particularly thick or thorny species, as nesting substrates and hunting perches (Prescott and Bjorge 1999). Potential nesting and foraging habitat for loggerhead shrikes is present near existing oil and gas structures, along power lines, and in areas where alkali soils support low stature grasses and shrubs. Existing utility and fence lines and tall sagebrush in shallow draws provide quality hunting perches. No shrike nests were documented in the Antelope and JAB Survey Area during the baseline surveys. One adult shrike was observed in the eastern (Antelope) portion of the survey area in early June 2007. The bird was perched on a fence pole in close proximity to an oil pad and an active sage-grouse lek in the mid-morning hours. Shrikes were not observed or heard singing in the western (JAB) part of the survey area.

Suitable nesting and foraging habitat for sage sparrows and sage thrashers is present in the moderately dense stands of sagebrush with its grass and forb understory that occurs throughout much of the Antelope and JAB Survey Area. Nests were not located, but both species were observed and heard singing on a regular basis throughout the 2007 wildlife surveys.

Federal and state agencies have no records of burrowing owls in the Antelope and JAB Survey Area, and this species was not observed during wildlife surveys conducted in 2007 or 2008. Prairie dog colonies, a preferred habitat of burrowing owls, were present only in the western (JAB) portion of the survey area that year; burrows of other small mammals (voles, ground squirrels) were present throughout the area. Numerous potential perch sites for this species are also present, including fence posts, low rock outcrops, soil mounds, and oil and gas structures.

Environmental Consequences

Proposed Action

As described previously, Uranium One uses a single drill rig during exploration operations, with surface disturbance associated with each drill site limited to an area measuring approximately 15 feet by 25 feet, or 0.009 acre. All drilling activities would occur within the Antelope and JAB License/Permit Area. Drill sites are typically spaced at regular intervals within each claim. Given the limited surface disturbance associated with each drill site, the maximum potential disturbance associated with exploratory drilling in the Antelope and JAB License/Permit Area would likely be no more than 20 non-contiguous acres (less than 0.001 % of the total license/permit area acreage) along with some limited potential disturbance from drill site access. This type of disturbance will not result in large expanses of habitat being dramatically transformed from its original character. Additionally, all drill sites will be reclaimed following either the completion of drilling or uranium recovery operations, depending on the location of, and results from, each drill site. Access to drill sites will be achieved using existing roads to the extent possible. When the project expands to full development, impacts would also be partially mitigated by the low proportion (10%) of the total license/permit area expected to be impacted by future construction of well fields, processing facilities, and associated infrastructure. Once those structures are completed, regular disturbance would be reduced to only that needed to operate and maintain the operations. Traffic would persist during production, but should occur at a reduced and possibly more predictable level. Limited habitat disturbance also results in fewer displaced animals from existing territories into other, potentially occupied, areas, which reduces competition and stress on animals in both locations.

White-tailed Prairie Dog

The Antelope and JAB License/Permit Area includes approximately 415 non-contiguous acres of prairie dog colonies. Most colonies were occupied during the 2007 wildlife baseline surveys. Disturbance from drilling within the colonies would be limited to an area of approximately 0.001 acre per drill site. Additional impacts would occur from any overland travel that might be necessary beyond existing two-track roads. Prairie dogs could be injured or killed by vehicles and moving equipment associated with drilling operations. Some burrow entrances could be covered by drilling equipment, but prairie dogs could presumably use alternate burrows to enter their chambers. The relatively slow movement of the drill rig into and out of an area, the systematic spacing of the drill sites, and the relatively small amount of surface disturbance associated with drilling activities would minimize direct impacts to animals. As indicated, habitat disturbance within a given colony would be quite limited, with hundreds of acres of undisturbed prairie dog

colonies remaining in and around the license/permit area. Additionally, the project is beyond the area identified for potential black-footed ferret reintroductions and thus, would not impact those efforts (USFS 2002, Grenier 2003).

Greater Sage-grouse

Direct impacts to displaying sage-grouse would occur if drill rigs operate on known or undocumented leks during the recognized breeding season. New or increased vehicular traffic on roads near leks could also result in injuries or mortalities to birds as they fly to and from the sites. These impacts would be greatest for the two leks located inside the Antelope and JAB License/Permit Area (Harrier and Arapahoe), where drilling operations and future development would occur. Existing roads would be used when possible and new roads would allow access to multiple drill sites to the extent possible.

If conducted during the nest initiation period, the proposed drilling operations could directly affect nesting in proximity to exploration activities. Female grouse disturbed prior to laying eggs could relocate farther from drilling activity, possibly into occupied and/or less suitable nesting habitat. Females that are already incubating eggs or with newly hatched chicks could abandon their nests or young if encroached upon by drilling equipment. The loss of eggs or chicks would affect the local grouse population, at least in the short term. Should drilling operations and related disturbance extend into the following breeding and nesting season, previously displaced grouse could be discouraged from returning to their traditional leks and nesting grounds, which could result in longer-term impacts to the local grouse population.

The potential of harassment, injury, and mortality to individual sage-grouse would increase in proportion to increased human presence. New linear habitat disturbances (i.e., roads) could provide additional convenient travel corridors for mammalian predators, which could result in an increased loss of adults, eggs, or chicks. Access roads not reclaimed would increase recreational traffic and, likely, the presence of domestic dogs resulting in greater injury and mortality to grouse.

Indirect impacts include a loss of access to preferred seasonal habitats due to ongoing activities that dissuade birds from using the area. Habitat loss itself would be minimal, with a cumulative total of approximately 9% disturbed throughout the entire license/permit area. Relocation of grouse into adjoining territories could result in overcrowding in preferred habitats, which could induce stress in the local population and result in decreased population health and viability. While male grouse near some leks have become acclimated to varying degrees of human presence during the display season, grouse are somewhat shy birds and the increased noise and human presence associated with drilling is not conducive to strutting, breeding, and nesting activities.

Uranium One has already committed to minimizing impacts to breeding and nesting sage-grouse by voluntarily suspending drilling operations within 2 miles of the Harrier Lek in the Antelope portion of the license/permit area from March 15 through June 15, 2008. The company anticipates honoring similar timing and spatial limitations in the future, as drilling and eventual resource development occur. Additional options to minimize impacts to sage-grouse are discussed in the *Mitigation* section, below.

Mountain Plover

State and federal agencies had no records for mountain plover occurrence inside the Antelope and JAB License/Permit Area prior to wildlife baseline surveys conducted in 2007. No mountain plovers were observed there in 2007 or during subsequent surveys in spring 2008, despite the presence of suitable habitat. The only sightings of this species occurred in or near prairie dog colonies at least 0.25 mile from the western (JAB) portion of the license/permit boundary. However, the frequency of sightings inside the general survey area, coupled with the presence of suitable habitat (bud sage communities and white-tailed prairie dog colonies) inside the license/permit area and the limited degree of field time (one season), suggests that mountain plovers could occur in the Antelope and JAB License/Permit Area. Given the absence of mountain plover observations in the proposed disturbance area during spring 2008, the fact that drilling operations would occur during the non-breeding season later that year, and the presence of hundreds of acres of alternate habitat beyond the disturbance area, the proposed action is not likely to directly or indirectly affect mountain plovers in 2008. However, if drilling operations in the JAB portion of the license/permit area extend into the 2009 breeding season, additional surveys should be conducted to determine whether or not mountain plovers are present and what, if any, restrictions or mitigation measures should be implemented.

Other BLM Sensitive Species

Sagebrush-steppe Species - Most of the BLM Sensitive Species discussed in this analysis are known to use sagebrush-steppe habitats to some degree, whether for year-round, nesting, or foraging activities: the ferruginous hawk, greater sage-grouse, sage thrasher, loggerhead shrike, Brewer's sparrow, and sage sparrow. As described above, the sage-grouse was the only avian BLM Sensitive Species confirmed as nesting within the Antelope and JAB License/Permit Area in 2007 or spring 2008. Regardless of their nesting status, all six species were documented inside the license/permit area, and therefore could potentially experience the same type of direct and/or indirect impacts from the proposed drilling operations as those described previously: e.g., injury, mortality, avoidance, displacement and increased competition for resources, etc. Those potential impacts would be minimized by the timing, extent, and duration of the proposed

drilling operations. Enforced speed limits during all phases of the project would further reduce potential impacts to wildlife throughout the year, particularly during the breeding season. If drilling operations extend into the 2009 breeding season, new surveys would need to be conducted and potential impacts would need to be reassessed.

Species Associated with Prairie Dog Colonies - As described above, mountain plovers and burrowing owls are strongly associated with prairie dog colonies. Potential impacts to prairie dogs and plovers were described in their respective sections, above. Because burrowing owls are active during the day, direct and indirect effects for owls nesting in prairie dog colonies would be similar to those of the prairie dogs themselves. However, agency databases show no records for burrowing owls in the survey area, and none were observed in or near the Antelope and JAB License/Permit Area during 2007, despite the many hours spent mapping the prairie dog colonies in the survey area. Additionally, surface disturbance would be relatively minimal and short-lived, both in a particular location and throughout the license/permit area as a whole. Given these facts, the proposed action is not expected to affect burrowing owls at this time. However, if drilling operations in the western (JAB) portion of the license/permit area extend into the 2009 breeding season, additional surveys should be conducted to determine whether or not burrowing owls are present and what, if any, restrictions or mitigation measures should be implemented.

No Action Alternative

Under the No Action Alternative, exploratory drilling associated with the Antelope and JAB Uranium Project would not be implemented. Therefore, impacts to BLM Sensitive Species would be similar to those described for wildlife species in general under the No Action Alternative overview assessment, above.

3.5.5.3.13 Other Migratory Bird Species of Management Concern in Wyoming

Affected Environment

The USFWS relies on a list entitled *Migratory Bird Species of Management Concern in Wyoming* for non-coal surface disturbance projects (USFWS 2002). This list was taken directly from the Wyoming Bird Conservation Plan (Cerovski et al. 2001). The migratory bird list includes 77 avian species of concern. Twenty-two of these species are considered to be Level I, which designates species in need of conservation action. The remaining 55 species are classified as Level II, for which continued monitoring is recommended. The entire list of 77 avian species of concern is provided in Addendum 3.5-M.

That list also documents the species observed in the Antelope and JAB Survey Area during 2007 and early 2008.

The following discussion is limited to the 22 species classified as Level I, as those are the birds for which conservation action is recommended. Of those 22 species, 6 were discussed in the *Raptors* or *BLM Sensitive Species* sections, above: the mountain plover, greater sage-grouse, ferruginous hawk, Brewer's sparrow, sage sparrow, and burrowing owl. Five additional species were previously eliminated from the analysis due to habitat and/or range limitations: the trumpeter swan, Baird's sparrow, long-billed curlew, northern goshawk, and peregrine falcon.

Eight of the remaining 11 species were also excluded from evaluations because their habitat requirements do not exist within the survey area and/or their ranges do not overlap that area: the Wilson's phalarope (*Phalaropus tricolor*), Franklin's gull (*Larus pipixcan*), Forster's tern (*Sterna forsteri*), black tern (*Chlidonias niger*), whooping crane (*Grus americana*), piping plover (*Charadrius melodus*), upland sandpiper (*Bartramia longicauda*), and Swainson's hawk (*Buteo swainsoni*). Six of those eight species are associated with wetlands and other aquatic habitats that are either extremely limited or absent from the Antelope and JAB Survey Area. The upland sandpiper is a grassland obligate (Houston and Bowen 2001). Swainson's hawks are typically associated with grasslands, trees, or riparian areas, all of which are also quite limited or lacking in the survey area. Although these species could occur occasionally, they are not expected to be present with any regularity or for any extended period and, thus, are not discussed further.

Three migratory bird species of management concern not yet discussed or eliminated from the evaluation could occur in the Antelope and JAB Survey Area, though some would be more likely to be present than others: the McCown's longspur (*Calcarius mccownii*), short-eared owl, and bald eagle.

The McCown's longspur is a common summer resident of the eastern plains and great basin-foothills grasslands, basin-prairie shrublands, and agricultural areas throughout most of Wyoming (Cerovski et al. 2004). Specifically, this species requires open habitats such as sparsely vegetated, low structured grasslands and heavily grazed pastures containing a moderate bare ground component for nesting and foraging (With 1994). McCown's longspurs are regularly observed in prairie dog colonies in northeastern Wyoming, and the larger colonies in the Antelope and JAB Survey Area could potentially provide nesting and foraging habitat for this species (Jones & Stokes, unpublished data). The height and composition of vegetation throughout the remainder of the area is generally too tall and dense to provide suitable habitat for these longspurs. McCown's longspurs were not observed in the survey area during 2007 or 2008.

The short-eared owl is a sporadic summer resident of open basin-prairie shrublands, grasslands, marshes, and irrigated native meadows throughout Wyoming (Cerovski et al. 2004). Local occurrences of these owls are unpredictable, as populations fluctuate yearly due to variation in small-mammal populations, especially voles, their primary prey (Holt and Leasure 1993). Potential nesting and foraging habitat exists for the short-eared owl within portions of the survey area. However, the lack of lush grasslands or substantial grassy understory in the sagebrush stands makes nesting habitat marginal in many areas. Short-eared owls were not observed in the survey area during wildlife surveys conducted in 2007 and 2008.

A review of agency records revealed that bald eagles have never been recorded nesting or roosting in the Antelope and JAB Survey Area. This is due largely to the lack of desirable nesting habitat (trees, cliffs, escarpments) as well as the fact that the survey area does not provide any fisheries or other concentrated sources of prey or carrion typically associated with roosting and nesting bald eagles. One sub-adult bald eagle was observed on April 4, 2007. The eagle appeared to be hunting (circle-soaring) over a stand of robust sagebrush in NE¼ NE ¼ Section 18, T26N, R92W, approximately 1 mile southeast of the license/permit area.

Environmental Consequences

Proposed Action

Due to the overlap between habitats used by McCown's longspurs, short-eared owls, and other species utilizing the same habitat types, the potential impacts to longspurs and these owls would be the same as those described for prairie dog colonies and sagebrush communities in general, above. Conversely, the lack of potential nesting or roosting sites, and the lack of concentrated sources of prey, indicate that direct and indirect impacts of the proposed action on bald eagles would be minimal. Potential direct and indirect impacts from the proposed drilling operations could include injury, mortality, avoidance, displacement and increased competition for resources. Those potential impacts would be minimized by the timing, extent, and duration of the proposed drilling operations and, thus, impacts would likely affect individuals rather than populations. If drilling operations extend into the 2009 breeding season, new surveys would need to be conducted for these species and potential impacts would need to be reassessed.

No Action Alternative

Under the No Action Alternative, exploratory drilling associated with the Antelope and JAB Uranium Project would not be implemented. Therefore, impacts to USFWS

Migratory Bird Species of Management Concern would be similar to those described for wildlife species in general under the No Action Alternative overview assessment, above.

3.5.5.3.14 Waterfowl and Shorebirds

Affected Environment

Under natural conditions, the majority of the Antelope and JAB License/Permit Area and surrounding perimeter provide limited, seasonal, and marginal habitat for waterfowl and shorebirds. Natural aquatic habitats are mainly present during spring migration, and are limited to livestock ponds and deeper draws protected from direct sunlight that can hold water for varying amounts of time following measurable precipitation. The exception is the portion of Arapahoe Creek that flows through the northwestern (JAB) corner of the license/permit area, and portions of Lost Creek that flow outside of the license/permit area. During spring, these reaches provide water, aquatic vegetation, and food (vegetation and invertebrates) that could support migrating waterfowl and shorebirds as they travel through the area, or limited numbers of resident birds. However, as described above, these streams are not perennial and are typically dry by mid-summer. Any waterfowl, shorebirds, or other aquatic species remaining in the area beyond spring would need to move to alternate water sources farther beyond the license/permit area.

Neither waterfowl nor shorebird species were observed inside the Antelope and JAB License/Permit Area during wildlife surveys conducted in 2007 and 2008. The gadwall (*Anas strepera*) was the only waterfowl species observed in the general survey area during the wildlife surveys; no shorebirds were seen. These ducks were regularly seen in May and June 2007 swimming in pools in Lost Creek or in two large, man-made ponds with established riparian vegetation. All sightings occurred outside the license/permit area.

Environmental Consequences

Proposed Action

Drilling exploration activities in the Antelope and JAB License/Permit Area would have little effect on migrating and breeding waterfowl and shorebirds since little, if any, existing habitat is present in the eastern (Antelope) portion of the area, and it does not currently support large groups or populations of these species. Additionally, no development is currently planned for the northwest portion of the JAB Area.

Waterfowl that seasonally inhabit the portion of Arapahoe Creek that runs through the northwestern (JAB) corner of the license/permit area could experience some impacts if drilling occurred near the creek during spring or early summer. Nests, chicks, and/or adult birds could be destroyed by large machinery and support vehicles as the drill rig traveled throughout the area. Injury and mortalities could also result from collisions with these vehicles. Any newly constructed access roads would create additional travel corridors for mammalian predators, which could increase losses to eggs or young birds. Increased road access to the area would encourage increased public recreational use, adding to the frequency of injuries and mortalities, nest damage, and loss from domestic dog predation. Foraging adults and young could also be forced to use other areas for feeding and loafing activities. However, in 2007, none of these alternate water bodies were crowded with other waterfowl to the degree that over competition would be expected. Potential impacts to waterfowl and shorebirds using Arapahoe Creek could be minimized by conducting drilling operations nearest the creek during the non-breeding season, when the water source has dried up and waterfowl and shorebirds have moved on to other more suitable habitats outside the license/permit area. Waterfowl inhabiting Lost Creek would not be affected by the proposed drilling, as the creek is located well outside the project area.

No Action Alternative

Under the No Action Alternative, exploratory drilling associated with the Antelope and the JAB Uranium Project would not be implemented. No impacts to waterfowl, shorebirds, or their habitats would occur under this alternative.

3.5.5.3.15 Aquatic resources, Amphibians, and Reptiles

Affected Environment

The aquatic resources present within the Antelope and JAB License/Permit Area and surrounding perimeter have been thoroughly described in the *General Setting*, *BLM Sensitive Species*, and *Waterfowl and Shorebird* sections, above. Water is a limiting factor throughout the survey area and surrounding lands, with no perennial streams and all natural flow categorized as intermittent or ephemeral. The area is drained by Osborne Draw, Arapahoe Creek, and Lost Creek and their numerous tributaries. The creeks are seasonal, meandering streams with sandy soil substrates and intermittent riparian vegetation. Aquatic species are not locally common inhabitants of the survey area. The lack of deep-water habitat and perennial water sources precludes the presence of fish, and decreases the potential for other aquatic species to exist.

Aquatic amphibians and aquatic reptiles were not observed during the 2007 or 2008 surveys in the Antelope or JAB License/Permit Area or surrounding perimeter. Lizards (species not identified) were often observed sunning themselves on rocks and on sandy soil in the summer months during all except the early morning hours. These sightings were widespread throughout the survey area, with observations increasing as the summer progressed and the days got hotter. The shed remains of a snake skin were found in the north central portion of the survey perimeter in early May, 2007. The skin was at the base of a rock outcrop and looked as though it belonged to a bullsnake (*Pituophis cantenifer sayi*).

Environmental Consequences

Proposed Action

Because year-round aquatic habitat for amphibians and other aquatic or semi-aquatic species is so limited in the Antelope and JAB License/Permit Area, and because drilling operations will occur in upland habitats, the proposed action is expected to result in no impact on aquatic habitats or water-obligate species. Terrestrial wildlife or terrestrial life-phases of some amphibians could be affected by drilling operations, particularly at sites located in the northwestern (JAB) portion of the license/permit area where sandy soils, rock formations, and water resources are still limited, but somewhat more common. The most likely impact would be injuries to, and mortalities of, reptiles due to moving machinery and support vehicles. Impacts would be expected to be greater during equipment transportation that during stationary drilling itself. Because drilling activities would occur only during the day, nocturnal reptiles and amphibians would experience fewer impacts. The limited timing, nature, and duration of drilling at a given location would further reduce potential impacts to these species.

No Action Alternative

Under the No Action Alternative, exploratory drilling associated with the Antelope and the JAB Uranium Project would not be implemented. No impacts to amphibians, reptiles, aquatic species, or their habitats would occur under this alternative.

3.5.5.3.16 Regulatory Compliance, Mitigation, and Monitoring - Overview

Regulatory Compliance

Regulatory guidelines and requirements designed to prevent or reduce drilling and mining impacts to wildlife on public lands would be developed and provided by the

regulating and permitting agencies. Current BLM timing stipulations, as well as other monitoring, mitigation, and reclamation measures would be followed to protect vertebrate species of concern and their habitats.

Mitigation

The potential for impacts associated with drilling operations would be largely mitigated by the relatively small area of surface disturbance associated with exploration activities. Surface disturbance associated with each drill site consists of an area measuring approximately 15 feet by 25 feet, or 0.01 acre, with drill sites spaced at regular intervals within each claim. Consequently, the maximum potential disturbance associated with exploratory drilling in the Antelope and JAB License/Permit Area would likely be no more than 20 non-contiguous acres (less than 0.001 % of the total license/permit area acreage) along with some limited potential disturbance from drill site access. This type of disturbance will not result in large expanses of habitat being dramatically transformed from its original character as in other surface mining operations. Additionally, all drill sites will be reclaimed following either the completion of drilling or uranium recovery operations, depending on the location of, and results from, each drill site. When the project expands to full development, impacts would also be partially mitigated by the low proportion (10%) of the total license/permit area expected to be impacted by future construction of well fields, processing facilities, and associated infrastructure. Once those structures are completed, regular disturbance would be reduced to only that needed to operate and maintain the operations. Traffic would persist during production, but should occur at a reduced and possibly more predictable level. Limited habitat disturbance also results in fewer displaced animals from existing territories into other, potentially occupied, areas, which reduces competition and stress on animals in both locations.

Given the factors outlined above, and the limited use of the Antelope and JAB Survey Area by most vertebrate species of concern, impacts to those species from exploratory drilling and future ISR operations are expected to be minimal. Nevertheless, regulatory guidelines and requirements designed to prevent or reduce impacts to wildlife would include one or more of the following, as directed by the various regulating and permitting agencies:

1. Fencing designed to permit big game passage to the extent possible;

2. Use of existing roads when possible, and location of newly constructed roads to access more than one drill site;

3. Enforced speed limits to minimize collisions with wildlife, especially during the breeding season;

4. Adherence to timing and spatial restrictions within specified distances, as determined by appropriate regulatory agencies, of active sage-grouse leks during the breeding season (March 1 – June 15);

5. If direct impacts to raptors or other migratory bird species of management concern could result from drilling exploration or future ISR development and operations, then a Monitoring and Mitigation Plan for those species must be prepared and approved by the USFWS, including one or more of the following provisions:

    i. Relocation of active and inactive raptor nests that would be impacted by drilling, construction, or operation activities in accordance with the approved raptor monitoring and mitigation plan;

    ii. Creation of raptor nests and nesting habitat through enhancement efforts such as nest platforms to mitigate other nest sites impacted by ISR operations;

    iii. Obtaining appropriate permits for all removal and mitigation activities;

    iv. Establishing buffer zones protecting raptor nests where necessary and restricting mine-related disturbances from encroaching within buffers around active raptor nests from egg-laying until fledging to prevent nest abandonment, or injury to eggs or young;

    v. Reestablishing the ground cover necessary to attract and sustain a suitable raptor prey base after drilling, construction, and future mining; and

    vi. Required use of raptor-safe construction for overhead power lines according to current guidelines and recommendations by the Avian Power Line Interaction Commission (APLIC) and/or USFWS;

6. Restoration of sagebrush and other shrubs on reclaimed lands and grading of reclamation to create swales and depressions for sage-obligates and their young;

7. Restoration of pre-drilling and pre-mining native habitats for species that nest and forage in those vegetative communities;

8. Restoration of diverse landforms, direct topsoil replacement, and the construction of brush piles, snags, and/or rock piles to enhance habitat for wildlife;

9. Restoration of habitat provided by jurisdictional wetlands; and

10. Reclamation of creek channels and restoration of surface water flow quantity and quality after mining to approximate pre-mining conditions.

Another effective way to minimize impacts related to exploratory drilling in the Antelope and JAB License/Permit Area would be to use a systematic drilling pattern that affects only one area at a time, working from one side the license/permit area to another. Reclamation would be completed in the same manner, with activity occurring in just one area at a time after drilling is complete. Agency standards for reclamation would be followed. This systematic approach would allow more mobile wildlife species to relocate into adjoining, undisturbed habitat and then return following completion of drilling in a particular area. These efforts, in conjunction with the mitigation measures outlined above, would decrease direct and indirect impacts for all wildlife species.

Given the seasonal use of the area by those vertebrate species of concern that were documented in the survey area, the impacts described above could be fully mitigated with the delay of all road construction and drilling activity within established buffer zones during the recognized breeding and nesting season (February 1 through July 31, annually) for those species. Exploration would be conducted between August and the end of January. Given the timing of the current application process, this timing is likely to occur for much of the proposed drilling project. The fact that crews work only during daylight hours would further reduce impacts to year-round residents, particularly more nocturnal species such as some reptiles; that timing also reduces potential impacts to these less mobile species due to moving equipment and vehicles.

Monitoring

Due to the dynamic nature of wildlife species, Uranium One voluntarily commissioned monitoring of known sage-grouse leks and raptor nest sites in spring 2008 for the Antelope and JAB Uranium Project. Those efforts will transition to annual monitoring once ISR operations are permitted, which will continue through the life of the project. Annual wildlife monitoring surveys should follow the same regimen as other ISR operations in the region to maximize comparisons among survey results and impact assessments. At a minimum, those surveys typically include the following, as modified for site-specific habitats (e.g., no trees, so no bald eagle winter roost surveys):

1. Early spring surveys for, and monitoring of, sage-grouse leks within one mile of the license/permit area, new and/or occupied raptor territories and/or nests, Pygmy Rabbit, Mountain Plover, and T&E species on and within the license/permit area;

2. Other surveys as required by regulating agencies.

Based on results from previous surveys, the WGFD recommended in late 1999 that big game monitoring be discontinued on all existing surface mine sites in Wyoming. Similarly, results from a three-year big game monitoring program conducted at the Smith Ranch and Highland Uranium Projects during their respective permitting processes documented that those operations were having no significant negative impact on pronghorn or mule deer. Because the entire Antelope and JAB Survey Area is covered by WGFD big game surveys, the BLM did not require such efforts for these baseline wildlife surveys, and no long-term monitoring requirements are anticipated as necessary.

3.5.5.3.17 Residual Impacts

As described above, only 10% of the Antelope and JAB License/Permit Area is expected to be impacted by the combined results of exploratory drilling and future construction of well fields, processing facilities, and associated infrastructure. That disturbance would occur in 14 non-contiguous mineral development areas spread across more than 14,500 acres.

Current residual (cumulative) short- and long-term disturbances to vertebrate species of concern within the survey area arise from multiple sources. Those include direct and indirect impacts of livestock grazing, hunting and recreational use, road development, conventional oil and gas development, and other forms of energy exploration and extraction operations. Those activities have occurred in the past and most are expected to continue at similar levels. Energy development is expected to occur at an increased rate in the future. Those activities require increased levels of traffic, noise, dust, and, ultimately, infrastructure (roads, fences, power lines) which can elevate the level of disturbance in the area.

Adverse effects to the evaluated species would consist primarily of potential harassment or displacement of foraging individuals due to human and equipment disturbance, and mortality or injury caused by vehicle collisions. The overall result of implementing the proposed action would be that individuals of some vertebrate species may be lost, but the cumulative impacts are not expected to significantly reduce the size or viability of their local populations. In addition, the proposed action would not conflict with the current

multiple-use management objectives on lands managed by the BLM.
Given the limited number of vertebrate species of concern known or suspected to inhabit the area, the limited habitat disturbance associated with drilling and future ISR operations relative to the size of the license/permit area, and Uranium One's commitments to honor important timing and spatial limitations and continue long-term monitoring, any such residual effects from this project would likely only occur on an individual basis. Drilling and ISR operations have requirements for reclamation of disturbed areas as recovery of energy resources is completed. Those reclamation efforts can further mitigate impacts to wildlife species and habitats, though the standards are widely variable among industries.

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ADDENDUM 3.5-A

VEGETATION SPECIES SUMMARY

Antelope Project			Vegetation Community				
Code	Scientific Name	Common Name	Sagebrush Grassland	Breaks Grassland	Mix-Grass/Mat-cushion Grassland	Big Sagebrush Shrubland	Intermittent Stream Grassland
Cool Season Perennial Grasses							
ACHHYM	*Achnatherum hymendoides*	Indian ricegrass	X	X	X	X	X
ACHPIN	*Achnatherum pinetorum*	Pine needlegrass	X	X		X	X
AGICRI	*Agropyron cristatum*	Crested wheatgrass	X	X	X	X	
CARPRA	*Carex praegracilis*	Fieldclustered sedge					X
CARSPP	*Carex* species	Sedge					X
DANUNI	*Danthonia unispicata*	Onespike danthonia					X
ELYELY	*Elymus elymoides*	Bottlebrush squirreltail	X	X	X	X	X
ELYHIS	*Elymus hispidus*	Intermediate wheatgrass	X		X	X	X
ELYLAN	*Elymus lanceolatus*	Thickspike wheatgrass		X			
ELYSPI	*Elymus spicatus*	Bluebunch wheatgrass	X	X	X	X	
ELYSPP	*Elymus* species	Wildrye		X		X	
KOEMAC	*Koeleria macrantha*	Prairie junegrass	X	X	X	X	X
HESCOM	*Hesperostipa comata*	Needleandthread	X	X	X	X	X
HORJUB	*Hordeum jubatum*	Foxtail barley					X
JUNBAL	*Juncus balticus*	Baltic rush					X
JUNSPP	*Juncus* species	Rush					X
NASVIR	*Nassella viridula*	Green needlegrass	X			X	X
POACUS	*Poa cusickii*	Cusick's bluegrass	X		X		X
POAPRA	*Poa pratensis*	Kentucky bluegrass					X
POASEC	*Poa secunda*	Sandberg bluegrass	X	X	X	X	X
Warm Season Perennial Grasses							

DISSTR	***Distichlis stricta***	**Inland saltgrass**					**X**
Annual Forbs							
ALYDES	***Alyssum desertorum***	**Desert alyssum**			**X**		**X**
ARESER	***Arenaria serpyllifolia***	**Tymeleaf sandwort**	**X**			**X**	
DESSOP	***Descurainia sophia***	**Flixweed tansymustard**		**X**	**X**		
DESSPP	***Descurania species***	**Tansymustard**	**X**			**X**	
	Species observed but not sampled						
Antelope Project			**Vegetation Community**				
Code	**Scientific Name**	**Common Name**	**Sagebrush Grassland**	**Breaks Grassland**	**Mix-Grass/Mat-cushion Grassland**	**Big Sagebrush Shrubland**	**Intermittent Stream Grassland**
Annual Forbs Continued							
GAYDIF	*Gayophytum diffusum*	Spreading groundsmoke	**X**	**X**		**X**	**X**
GAYSPP	*Gayophytum* species	Groundsmoke					**X**
GILTWE	*Gilia tweedyi*	Tweedy's gila					**X**
GNAPAL	*Gnaphalium palustre*	Cudweed				**X**	
MONNUT	***Monolepis nuttalliana***	**Nuttall's povertyweed**					**X**
LAPRED	***Lappula redowski***	**Beggars-tick**		**X**			
POLAVI	***Polygonum aviculare***	**Prostrate knotweed**					**X**
SALTRA	***Salsola tragus***	**Russian thistle**					**X**
Perennial Forbs							
ALLTEX	*Allium textile*	Textile onion					**X**
AGOGLA	*Agoseris glauca*	False dandelion				**X**	**X**
ANDSPP	*Androsace species*	Rockjasmine					**X**
ANTMIC	*Antennaria microphylla*	Littleleaf pussytoes		**X**	**X**	**X**	**X**
ARGANS	*Argentina anserine*	Silverweed cinquefoil					**X**
ASTMIS	*Astragalus miser*	Timber milkvetch			**X**		

ASTPUR	*Astragalus purshii*	Pursh milkvetch		X			
ASTSPA	*Astragalus spatulatus*	Spoonleaf milkvetch			X		
ASTSPP	*Astragalus species*	Locoweed	X	X		X	
CASSPP	*Castilleja species*	Indian paintbrush	X	X		X	X
CERARV	*Cerastium arvense*	Field cerastium		X			
CIRSPP	*Cirsium* species	Thistle					X
CRYFLA	***Cryptantha flavovulata***	**Roughseed cryptantha**					X
CRYFEN	***Cryptantha fendleri***	**Sanddune cryptantha**					X
CRYSPP	***Cryptantha* species**	**Cryptantha**					X
ERECON	***Eremogone congesta***	**Ballhead sandwort**					X
EREHOO	***Eremogone hookeri***	**Hooker sandwort**	X	X	X	X	X
ERICAE	***Erigeron caespitosus***	**Tufted fleabane**	X	X	X	X	X
	Species observed but not sampled						

Antelope Project			Vegetation Community				
Code	**Scientific Name**	**Common Name**	**Sagebrush Grassland**	**Breaks Grassland**	**Mix-Grass/Mat-cushion Grassland**	**Big Sagebrush Shrubland**	**Intermittent Stream Grassland**
Perennial Forbs contineud							
ERIFLA	*Eriogonum flavum*	Alpine golden buckwheat	X	X	X	X	X
ERISPP	*Eriogonum species*	Fleabane	X	X	X		X
ERIUMB	***Eriogonum umbellatum***	**Sulfur-flower buckwheat**	X			X	X
FABSPP	***Fabaceae* species**	**Legume**			X		
HAPSPP	*Haplopappus species*	Goldenweed			X		X
LEWRED	***Lewisia rediviva***	**Bitter root**	X	X		X	
LOMFOE	***Lomatium foeniculaceum***	**Desert biscuitroot**					X
LUPARG	***Lupinus argenteus***	**Silvery lupine**				X	

OXYNAN	*Oxytropis nana*	Stemless locoweed					X
PEDARG	*Pediomelum argophyllum*	Silverleaf scurfpea					X
PEDSPP	*Pediomelum species*	Indian breadroot	X				
PENSPP	*Penstemon species*	Penstemon					X
PHLHOO	*Phlox hoodii*	Hoods phlox	X	X	X	X	X
PHLLON	*Phlox longifolia*	Longleaf phlox			X		
PHLMUS	*Phlox muscoides*	Musk phlox			X		
PHLSPP	*Phlox* species	Phlox					X
SEDLAN	*Sedum lanceolatum*	Spearleaf stonecrop	X	X	X	X	X
SOLLAN	*Solidago longipetiolata*	Gray goldenrod	X				
STEACA	*Stenotus acaulis*	Stemless mock goldenweed	X	X	X	X	
STRLON	*Streptanthella longirostris*	Longbeak streptanthella			X		
SYMCAM	*Symphyotrichum campestre*	Western meadow aster					X
THERHO	*Thermopsis rhombifolia*	Prairie thermopsis					X
TRIGYM	*Trifolium gymnocarpon*	Hollyleaf clover	X	X	X	X	
TRIHYB	*Trifolium hybridum*	Alsike clover	X		X		X
VICAME	*Vicia americana*	American vetch				X	
VIOVAL	*Viola vallicola*	Sagebrush violet		X		X	X
ZIGVEN	*Zigadenus venenosus*	Meadow deathcamas					X
	Species observed but not sampled						

Antelope Project			Vegetation Community				
Code	**Scientific Name**	**Common Name**	**Sagebrush Grassland**	**Breaks Grassland**	**Mix-Grass/Mat-cushion Grassland**	**Big Sagebrush Shrubland**	**Intermittent Stream Grassland**

Perennial Half & Sub-Shrubs							
ARTFRI	*Artemisia frigida*	Fringed sagewort	X	X	X	X	
ARTPED	*Artemisia pedatifida*	Birdsfoot sagewort	X		X		
ATRGAR	*Atriplex gardneri*	Gardner saltbush		X			
GUTSAR	*Gutierrezia sarothrae*	Broom snakeweed		X	X	X	X
HYMSPP	*Hymenoxys species*	Rubberweed			X		
KRALAN	***Krascheninnikovia lanata***	**Winterfat**	X	X	X	X	X
LINPUN	***Linanthus pungens***	**Granite prickly gilia**	X	X	X	X	X
LUPSER	***Lupinus sericeus***	**Silky lupine**					X
PONCON	***Potentilla concinna***	**Elegant cinquefoil**					X
Perennial Shrubs							
ARTNOV	*Artemisia nova*	Black sagebrush	X	X	X	X	X
ARTCAN	*Artemisia cana*	Silver sagebrush					X
ARTTRI	*Artemisia tridentata*	Big sagebrush	X	X	X	X	X
ARTTRI	*Artemisia tridentata Nutt. Ssp. wyomingensis*	Wyoming big sagebrush					X
CHRVIS	*Chrysothamnus viscidflorus*	Douglas rabbitbrush	X	X	X	X	X
CHRSPP	*Chrysothamnus* species	Rabbitbrush					X
ERINAU	*Ericameria nauseosa*	Rubber rabbitbrush					X
Succulents							
OPUPAL	*Opuntia polyacantha*	Plains prickly pear	X	X	X	X	X
Lichen							
XANSPP	*Xanthoparmelia* species	Lichen	X				
	Species observed but not sampled						

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ADDENDUM 3.5-B

VEGETATION COVER SUMMARIES

ENERGY METALS CORPORATION
GREAT DIVIDE ANTELOPE PROJECT
Report: Cover Summary

Site Id: MGMCG
Name: Mix-Grass/Mat-cushion Grassland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

Species	Cover Mean Absolute	Cover Relative (%)	Std. Dev. n-1	Frequency Absolute	Frequency Relative (%)	I.V.	Rank
Cool Season Perennial Grasses							
Achnatherum hymenoides	0.36	1.00	1.00	13.64	1.81	2.81	13
Agropyron cristatum	0.18	0.50	0.85	4.55	0.60	1.10	17
Elymus elymoides	0.18	0.50	0.59	9.09	1.20	1.70	15
Elymus hispidus	0.09	0.25	0.43	4.55	0.60	0.85	18
Elymus spicatus	1.09	3.02	1.72	36.36	4.82	7.84	8
Koeleria macrantha	0.55	1.53	0.91	27.27	3.61	5.14	11
Hesperostipa comata	1.45	4.02	2.06	36.36	4.82	8.84	7
Poa cusickii	0.18	0.50	0.59	9.09	1.20	1.70	15
Poa secunda	7.09	19.66	3.25	95.45	12.65	32.31	2
Sub-total	11.17	30.98					
Annual Forbs							
Descurainia sophia	0.18	0.50	0.59	9.09	1.20	1.70	15
Sub-total	0.18	0.50					
Perennial Forbs							
Antennaria microphylla	0.27	0.75	0.94	9.09	1.20	1.95	14
Eremogone hookeri	2.00	5.55	2.62	45.45	6.02	11.57	5
Erigeron caespitosus	0.82	2.27	1.59	27.27	3.61	5.89	10
Eriogonum spp.	0.09	0.25	0.43	4.55	0.60	0.85	18
Fabaceae spp.	0.09	0.25	0.43	4.55	0.60	0.85	18
Haplopappus spp.	0.27	0.75	1.28	4.55	0.60	1.35	16
Phlox hoodii	2.27	6.30	1.98	72.73	9.64	15.93	4
Phlox longifolia	0.27	0.75	1.28	4.55	0.60	1.35	16
Phlox muscoides	1.00	2.77	2.02	27.27	3.61	6.39	9
Seum lanceolatum	0.55	1.53	0.91	27.27	3.61	5.14	11
Stenotus acaulis	1.82	5.05	2.89	40.91	5.42	10.47	6
Streptanthella longirostris	0.09	0.25	0.43	4.55	0.60	0.85	18
Trifolium hybridum	0.09	0.25	0.43	4.55	0.60	0.85	18
Sub-total	9.63	26.71					
Perennial Sub-Shrubs							
Artemisia frigada	0.36	1.00	0.79	18.18	2.41	3.41	12
Gutierrezia sarithrae	0.18	0.50	0.59	9.09	1.20	1.70	15
Hymenoxys spp.	0.09	0.25	0.43	4.55	0.60	0.85	18
Linanthus pungens	0.18	0.50	0.59	9.09	1.20	1.70	15
Sub-total	0.81	2.25					

ENERGY METALS CORPORATION
GREAT DIVIDE ANTELOPE PROJECT
Report: Cover Summary

Site Id: BS
Name: Big Sagebrush Shrubland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

	Cover			Frequency			
Species	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)	I.V.	Rank
Cool Season Perennial Grasses							
Achnatherum hymenoides	0.18	0.34	0.85	4.54	0.68	1.02	16
Achnatherum pinetorum	0.09	0.17	0.43	4.54	0.68	0.85	17
Agropyron cirstatum	0.18	0.34	0.85	4.54	0.68	1.02	16
Elymus elymoides	0.45	0.84	0.86	22.73	3.43	4.27	10
Elymus hispidus	0.36	0.68	1.00	13.64	2.06	2.73	13
Elymus spicatus	0.91	1.71	1.48	31.82	4.80	6.50	8
Hesperostipa comata	0.73	1.37	1.45	27.27	4.11	5.48	9
Koeleria macrantha	0.36	0.68	0.79	18.18	2.74	3.41	12
Nassella viridula	1.45	2.72	2.32	36.36	5.48	8.20	6
Poa secunda	6.18	11.59	4.23	86.36	13.01	24.60	3
Sub-total	10.89	20.42					
Annual Forbs							
Descurainia species	0.09	0.17	0.43	4.54	0.68	0.85	17
Gayophytum diffusum	0.27	0.51	0.94	9.09	1.37	1.88	14
Sub-total	0.36	0.68					
Perennial Forbs							
Antennaria microphylla	0.18	0.34	0.59	4.54	0.68	1.02	16
Astragalus purshii	0.09	0.17	0.43	4.54	0.68	0.85	17
Eremogone hookeri	2.09	3.92	2.65	45.45	6.85	10.77	5
Erigeron caespitosus	0.45	0.84	1.06	18.18	2.74	3.58	11
Eriogonum umbellatum	0.18	0.34	0.59	9.09	1.37	1.71	15
Lupinus argenteus	0.09	0.17	0.43	4.54	0.68	0.85	17
Phlox muscoides	0.09	0.17	0.43	4.54	0.68	0.85	17
Sedum lanceolatum	0.09	0.17	0.43	4.54	0.68	0.85	17
Stenotus acaulis	0.27	0.51	0.94	9.09	1.37	1.88	14
Trifolium gymnocarpon	0.18	0.34	0.59	9.09	1.37	1.71	15
Viola vallicola	0.18	0.34	0.59	9.09			
Sub-total	3.89	7.30					
Perennial Sub-Shrubs							
Gutierrezia sarothrae	0.09	0.17	0.43	4.54	0.68	0.85	17
Linanthus pungens	1.00	1.88	1.35	40.91	6.17	8.04	7
Sub-total	1.09	2.04					
Perennial Shrubs							
Artemisia nova	23.18	43.47	14.64	90.91	13.70	57.17	1
Artemisia tridentata	11.55	21.66	15.75	68.18	10.27	31.94	2
Chrysothamnus viscidflorus	2.18	4.09	2.30	63.64	9.59	13.68	4
Sub-total	36.91	69.22					
Perennial Succulants							
Opuntia polyacantha	0.18	0.34	0.59	9.09	1.37	1.71	15
Sub-total	0.18	0.34					
Total Vegetation	53.32		11.85				
Lichen	0.00		0.00				
Litter/Rock	24.37		13.00				
Total Ground Cover	77.69		11.42				
Bare Soil	22.28		11.42				
Total Cover	99.97						
Species Abundance (No. of Species/Sample)	29						

ENERGY METALS CORPORATION
GREAT DIVIDE ANTELOPE PROJECT
Report: Cover Summary

Site Id: ISG
Name: Intermittent Stream Grassland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

Species	Cover Mean Absolute	Cover Relative (%)	Std. Dev. n-1	Frequency Absolute	Frequency Relative (%)	I.V.	Rank
Perennial Sub-Shrubs							
Gutierrezia sarothrae	1.00	1.66	1.35	40.91	4.04	5.69	8
Hymenoxys spp	0.18	0.30	0.59	9.09	0.90	1.20	20
Linanthus pungens	0.64	1.06	1.14	27.27	2.69	3.75	11
Sub-total	1.82	3.02					
Perennial Shrubs							
Artemisia nova	17.18	28.47	7.40	95.45	9.42	37.88	1
Artemisia tridentata	8.64	14.32	6.34	100.00	9.87	24.18	2
Chrysothamnus viscidflorus	3.91	6.48	3.29	77.27	7.62	14.10	6
Sub-total	29.73	49.26					
Total Vegetation	60.35		6.86				
Lichen	0.00		0.00				
Litter/Rock	24.09		12.71				
Total Ground Cover	84.45		7.48				
Bare Soil	15.55		7.48				
Total Cover	100.00						
Species Abundance (No. of Species/Sample)	36						

ENERGY METALS CORPORATION
GREAT DIVIDE JAB PROJECT
Report: Cover Summary

Site Id: MGMCG
Name: Mix-Grass/Mat-cushion Grassland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

Species	Cover Mean Absolute	Cover Relative (%)	Std. Dev. n-1	Frequency Absolute	Frequency Relative (%)	I.V.	Rank
Cool Season Perennial Grasses							
Achnatherum hymenoides	4.64	12.30	4.59	77.27	10.12	22.42	2
Elymus elymoides	0.18	0.48	0.59	9.09	1.19	1.67	18
Elymus hispidus	0.36	0.95	0.79	18.18	2.38	3.34	14
Elymus spicatus	2.36	6.26	3.84	40.91	5.36	11.62	8
Hesperostipa comata	1.36	3.61	2.42	36.36	4.76	8.37	9
Koeleria macrantha	1.18	3.13	2.52	27.27	3.57	6.70	11
Poa secunda	6.18	16.39	4.53	95.45	12.50	28.89	1
Sub-total	16.26	43.12					
Annual Forbs							
Gayophytum diffusum	0.09	0.24	0.43	4.55	0.60	0.83	20
Sub-total	0.09	0.24					
Perennial Forbs							
Antennaria microphylla	0.27	0.72	0.70	13.64	1.79	2.50	16
Astragalus spp.	0.09	0.24	0.43	4.55	0.60	0.83	20
Eremogone hookeri	1.91	5.06	2.35	63.64	8.33	13.40	6
Eriogonum flavum	0.09	0.24	0.43	4.55	0.60	0.83	20
Eriogonum spp	0.27	0.72	0.70	13.64	1.79	2.50	16
Eriogonum umbellatum	0.09	0.24	0.43	4.55	0.60	0.83	20
Haplopappus spp	0.09	0.24	0.43	4.55	0.60	0.83	20
Phlox hoodii	0.64	1.70	1.29	22.73	2.98	4.67	12
Phlox muscoides	4.64	12.30	6.51	59.09	7.74	20.04	3
Stenotus acaulis	1.55	4.11	2.61	31.82	4.17	8.28	10
Sub-total	9.64	25.56					
Perennial Sub-Shrubs							
Artemisia frigada	0.55	1.46	1.53	13.64	1.79	3.24	15
Artemisia pedatifida	3.64	9.65	4.12	68.18	8.93	18.58	4
Atriplex gardneri	0.27	0.72	0.94	9.09	1.19	1.91	17
Krascheninnikovia lanata	0.36	0.95	0.79	18.18	2.38	3.34	14
Linanthus pungens	0.27	0.72	1.28	4.55	0.60	1.31	19
Sub-total	5.09	13.50					
Perennial Shrubs							
Artemisia nova	3.45	9.15	5.73	50.00	6.55	15.70	5
Artemisia tridentata	2.45	6.50	5.05	40.91	5.36	11.85	7
Chrysothamnus viscidflorus	0.55	1.46	1.26	18.18	2.38	3.84	13
Sub-total	6.45	17.10					
Perennial Succulants							
Opuntia polyacantha	0.18	0.48	0.59	9.09	1.19	1.67	18
Sub-total	0.18	0.48					
Total Vegetation	37.71		7.10				
Lichen	0.09		0.43				
Litter/Rock	34.19		11.48				
Total Ground Cover	71.99		7.74				
Bare Soil	28.00		7.56				
Total Cover	99.99						
Species Abundance (No. of Species/Sample)	27						

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ADDENDUM 3.5-C

VEGETATION DENSITY SUMMARIES

ENERGY METALS CORPORATION
GREAT DIVIDE ANTELOPE PROJECT
Report: Density Summary

Site Id: SG
Name: Sagebrush Grassland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 23
Report Date: 12-14-2007

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia nova	90.74	65.40	37.87	1.81	7,347.22
Artemisia tridentata	18.96	13.67	24.29	0.38	1,535.19
Chrysothamnus viscidflorus	20.57	14.83	13.05	0.41	1,665.55
Sub-Total	130.27	93.90		2.61	10,547.96
Sub-Shrubs & Half-Shrubs					
Artemisia frigada	0.39	0.28	1.50	0.01	31.58
Artemisia pedatifida	0.52	0.37	2.50	0.01	42.10
Krascheninnikovia lanata	1.04	0.75	3.47	0.02	84.21
Linanthus pungens	6.52	4.70	7.63	0.13	527.92
Sub-Total	8.47	6.10		0.17	685.82
Total	138.74	100.00		2.77	11,233.78

ENERGY METALS CORPORATION
GREAT DIVIDE ANTELOPE PROJECT
Report: Density Summary

Site Id: BG
Name: Breaks Grassland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia nova	49.5	38.39	24.97	0.99	4,008.02
Artemisia tridentata	64.09	49.70	17.13	1.28	5,189.37
Chrysothamnus viscidflorus	5.50	4.27	7.77	0.11	445.34
Sub-Total	119.09	92.35		2.38	9,642.72
Sub-Shrubs & Half-Shrubs					
Artemisia frigada	2.86	2.22	6.11	0.06	231.57
Artemisia pedatifida	0.18	0.14	0.85	0.00	14.57
Gutierrezia sarothrae	1.73	1.34	3.28	0.03	140.08
Krascheninnikovia lanata	0.36	0.28	1.22	0.01	29.15
Linanthus pungens	4.73	3.67	6.60	0.09	382.99
Sub-Total	9.86	7.65		0.20	798.36
Total	128.95	100.00		2.58	10,441.08

ENERGY METALS CORPORATION
GREAT DIVIDE ANTELOPE PROJECT
Report: Density Summary

Site Id: MGMCG
Name: Mix-Grass/Mat-cushion Grassland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia nova	45.68	37.70	47.00	0.91	3,698.71
Artemisia tridentata	54.68	45.12	62.60	1.09	4,427.44
Chrysothamnus viscidflorus	5.50	4.54	6.38	0.11	445.34
Sub-Total	105.86	87.36		2.12	8,571.48
Sub-Shrubs & Half-Shrubs					
Artemisia frigada	3.23	2.67	4.60	0.06	261.53
Artemisia pedatifida	6.68	5.51	14.55	0.13	540.88
Gutierrezia sarithrae	1.05	0.87	2.46	0.02	85.02
Krascheninnikovia lanata	1.41	1.16	3.67	0.03	114.17
Linanthus pungens	2.95	2.43	7.44	0.06	238.86
Sub-Total	15.32	12.64		0.31	1,240.46
Total	121.18	100.00		2.42	9,811.94

ENERGY METALS CORPORATION
GREAT DIVIDE ANTELOPE PROJECT
Report: Density Summary

Site Id: BS
Name: Big Sagebrush Shrubland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia nova	75.68	53.18	32.22	1.51	6,127.81
Artemisia tridentata	27.32	19.20	28.20	0.55	2,212.10
Chrysothamnus viscidflorus	30.68	21.56	30.42	0.61	2,484.16
Sub-Total	133.68	93.94		2.67	10,824.07
Sub-Shrubs & Half-Shrubs					
Artemisia frigida	0.45	0.32	2.13	0.01	36.44
Gutierrezia sarothrae	1.05	0.74	2.57	0.02	85.02
Krascheninnikovia lanata	0.27	0.19	0.88	0.01	21.86
Linanthus pungens	6.86	4.82	10.12	0.14	555.45
Sub-Total	8.63	6.06		0.17	698.77
Total	142.31	100.00		2.85	11,522.84

ENERGY METALS CORPORATION
GREAT DIVIDE ANTELOPE PROJECT
Report: Density Summary

Site Id: ISG
Name: Intermittent Stream Grassland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia nova	35.23	33.01	19.74	0.70	2,852.57
Artemisia tridentata	38.55	36.12	34.67	0.77	3,121.39
Chrysothamnus viscidflorus	24.05	22.53	21.97	0.48	1,947.33
Sub-Total	97.83	91.65		1.96	7,921.30
Sub-Shrubs & Half-Shrubs					
Gutierrezia sarothrae	3.32	3.11	3.91	0.07	268.82
Krascheninnikovia lanata	0.32	0.30	1.49	0.01	25.91
Linanthus pungens	5.27	4.94	5.49	0.11	426.71
Sub-Total	8.91	8.35		0.18	721.44
Total	106.74	100.00		2.13	8,642.74

ENERGY METALS CORPORATION
GREAT DIVIDE JAB PROJECT
Report: Density Summary

Site Id: SG
Name: Sagebrush Grassland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia nova	54.00	34.13	36.18	1.08	4,372.38
Artemisia tridentata	36.59	23.12	34.30	0.73	2,962.69
Chrysothamnus viscidflorus	9.82	6.21	13.93	0.20	795.13
Sub-Total	100.41	63.46		2.01	8,130.20
Sub-Shrubs & Half-Shrubs					
Artemisia frigada	6.73	4.25	18.32	0.13	544.93
Artemisia pedatifida	47.55	30.05	132.45	0.95	3,850.12
Atriplex gardneri	0.27	0.17	0.94	0.01	21.86
Krascheninnikovia lanata	2.32	1.47	4.11	0.05	187.85
Linanthus pungens	0.95	0.60	1.84	0.02	76.92
Sub-Total	57.82			1.16	4,681.69
Total	158.23	63.46		3.16	12,811.88

ENERGY METALS CORPORATION
GREAT DIVIDE JAB PROJECT
Report: Density Summary

Site Id: MGMCG
Name: Mix-Grass/Mat-cushion Grassland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia nova	29.32	20.93	41.49	0.59	2,374.04
Artemisia tridentata	8.50	6.07	13.58	0.17	688.25
Atriplex canescens	1.05	0.75	3.17	0.02	85.02
Chrysothamnus viscidflorus	0.23	0.16	1.04	0.00	18.62
Ericameria nauseosa	14.82	10.58	17.06	0.30	1,199.98
Sub-Total	53.92	38.50		1.08	4,365.90
Sub-Shrubs & Half-Shrubs					
Artemisia frigada	5.64	4.03	10.27	0.11	456.67
Artemisia pedatifida	67.23	48.00	53.93	1.34	5,443.61
Atriplex gardneri	2.23	1.59	6.89	0.04	180.56
Gutierrezia sarothrae	0.36	0.26	1.67	0.01	29.15
Krascheninnikovia lanata	10.00	7.14	13.20	0.20	809.70
Linanthus pungens	0.68	0.49	2.16	0.01	55.06
Sub-Total	86.14	61.50		1.72	6,974.76
Total	140.06	100.00		2.80	11,340.66

ENERGY METALS CORPORATION
GREAT DIVIDE JAB PROJECT
Report: Density Summary

Site Id: BS
Name: Big Sagebrush Shrubland
Comm. Type/Form: Vegetation Baseline
Sample Date: 6/25/2007 to 7/1/2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 22
Report Date: 12-14-2007

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia nova	36.73	32.23	45.77	0.73	2,974.03
Artemisia tridentata	27.68	24.29	32.65	0.55	2,241.25
Chrysothamnus viscidflorus	13.68	12.00	27.05	0.27	1,107.67
Sarcobatus vermiculatus	5.36	4.70	24.94	0.11	434.00
Sub-Total	83.45	73.23		1.67	6,756.95
Sub-Shrubs & Half-Shrubs					
Artemisia frigida	0.73	0.64	2.07	0.01	59.11
Artemisia pedatifida	24.05	21.10	48.34	0.48	1,947.33
Atriplex gardneri	4.05	3.55	12.99	0.08	327.93
Krascheninnikovia lanata	1.68	1.47	4.65	0.03	136.03
Sub-Total	30.51	26.77		0.61	2,470.39
Total	113.96	100.00		2.28	9,227.34

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ADDENDUM 3.5-D

ANTELOPE AND JAB VEGETATION MAPS

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE,

THAT CAN BE VIEWED AT THE RECORD TITLED: DRAWING NO. FIGURE 3.5-1A, "ANTELOPE LICENSE AREA VEGETATION MAPPING"

WITHIN THIS PACKAGE... OR BY SEARCHING USING THE DOCUMENT/REPORT NO. FIGURE 3.5-1A

D-01

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE,

THAT CAN BE VIEWED AT THE RECORD TITLED: DRAWING NO. FIGURE 3.5-1B, "JAB LICENSE AREA VEGETATION MAPPING"

WITHIN THIS PACKAGE... OR BY SEARCHING USING THE DOCUMENT/REPORT NO. FIGURE 3.5-1B

D-02

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ADDENDUM 3.5-E

ANTELOPE AND JAB VEGETATION PHOTOGRAPHS

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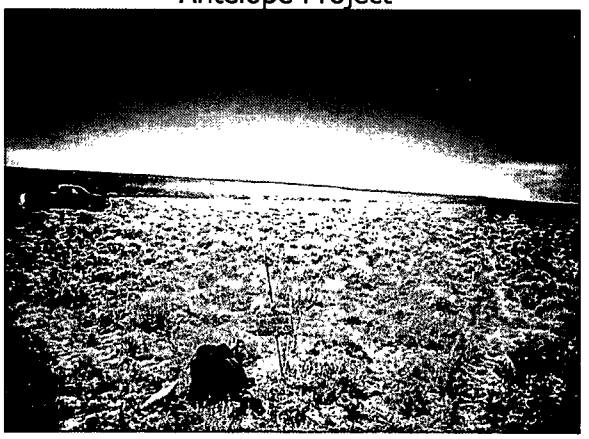
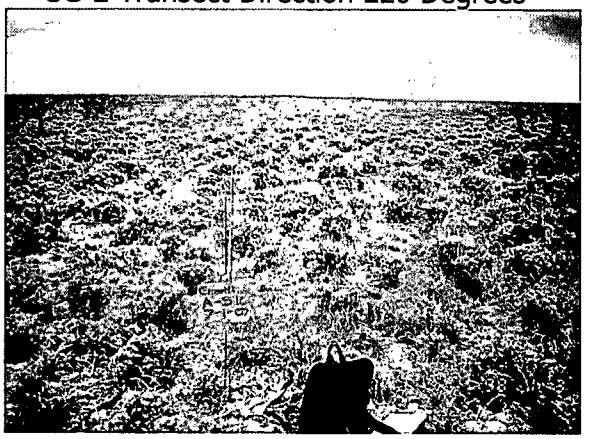


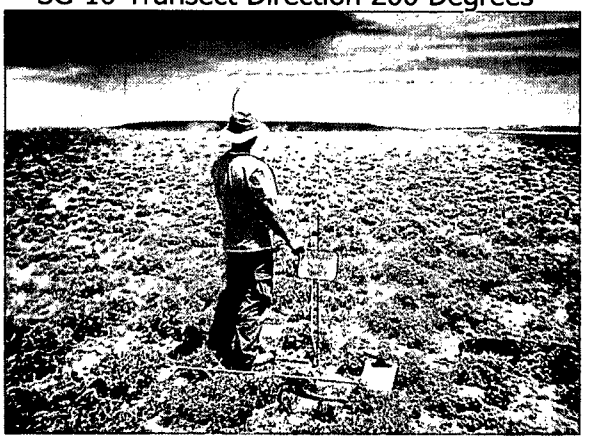
SG-2 Transect Direction 220 Degrees

SG-5 Transect Direction 0 Degrees



SG-10 Transect Direction 200 Degrees

SG-11 Transect Direction 10 Degrees



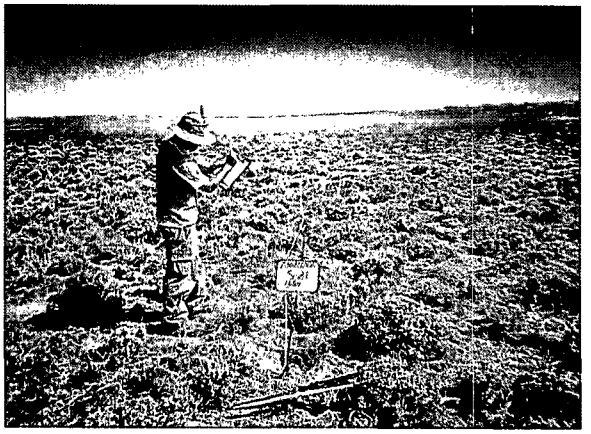
SG-16 Transect Direction 55 Degrees

NO PHOTO AVAILABLE

SG-18 Transect Direction 155 Degrees

Antelope Project

NO PHOTO AVAILABLE



SG-21 Transect Direction 0 Degrees

SG-19 Transect Direction 235 Degrees

SG-24 Transect Direction 0 Degrees

SG-23 Transect Direction 105 Degrees

SG-26 Transect Direction 280 Degrees

SG-25 Transect Direction 110 Degrees

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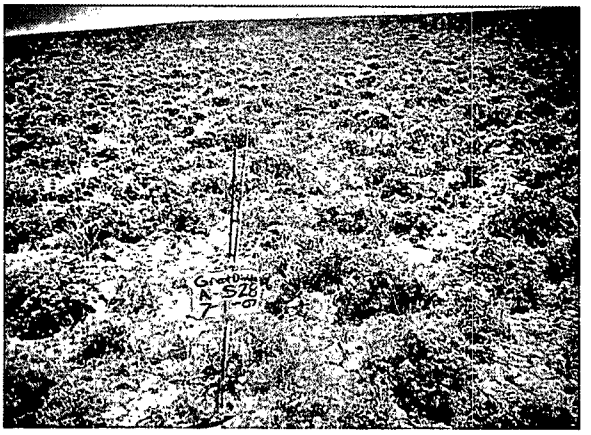
SG-27 Transect Direction 195 Degrees



SG-28 Transect Direction 40 Degrees

SG-32 Transect Direction 110 Degrees

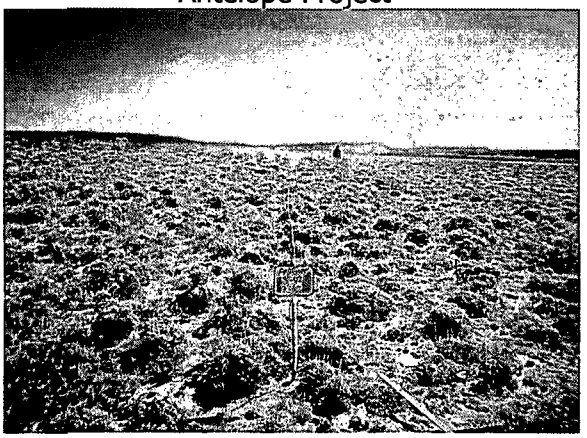
SG-34 Transect Direction 210 Degrees

NO PHOTO AVAILABLE

SG-35 Transect Direction 185 Degrees

SG-37 Transect Direction 325 Degrees

Antelope Project



SG-42 Transect Direction 90 Degrees

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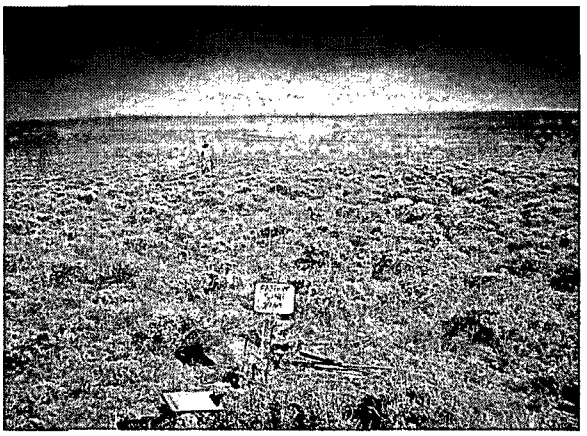
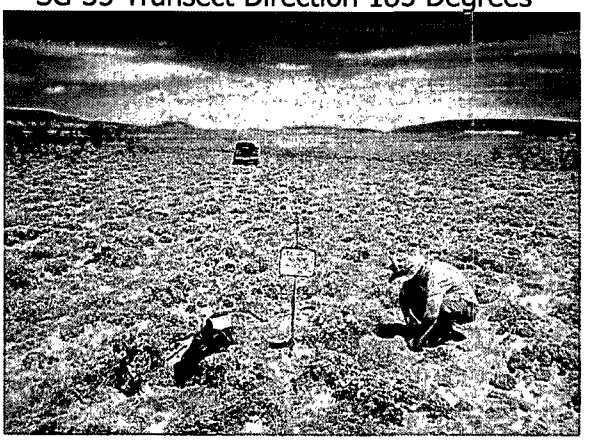
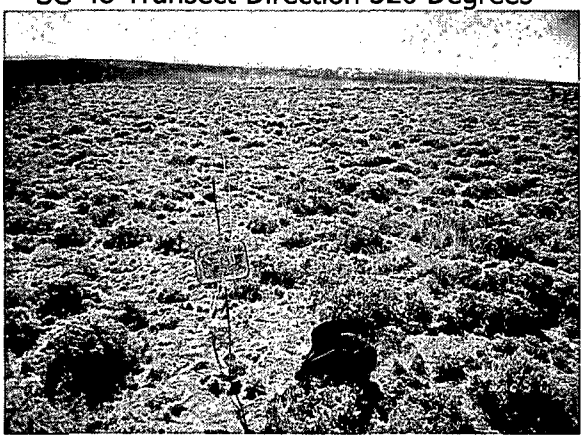
SG-35 Transect Direction 185 Degrees



SG-48 Transect Direction 320 Degrees



SG-49 Transect Direction 15 Degrees



MGMCG-1 Transect Direction 60 Degrees

MGMCG-3 Transect Direction 170 Degrees

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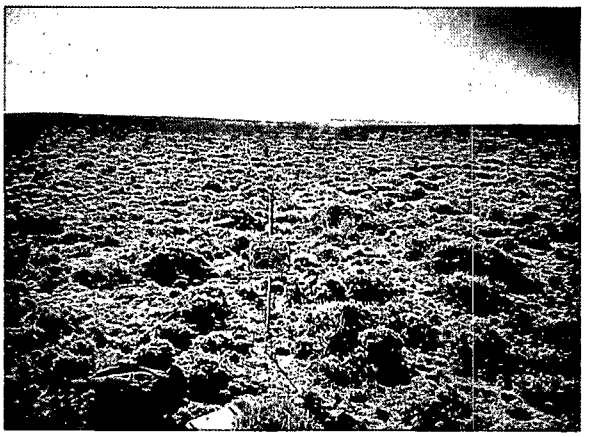
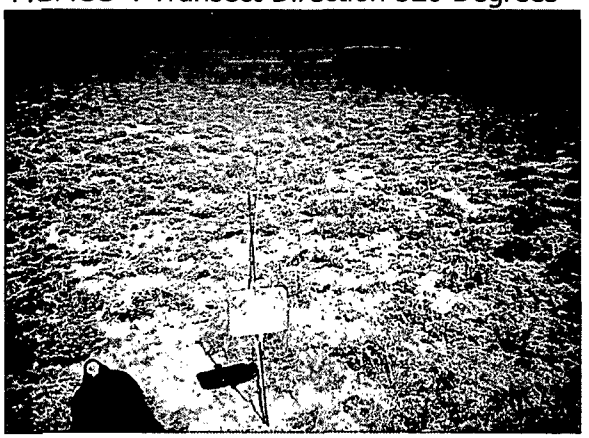
NO PHOTO AVAILABLE

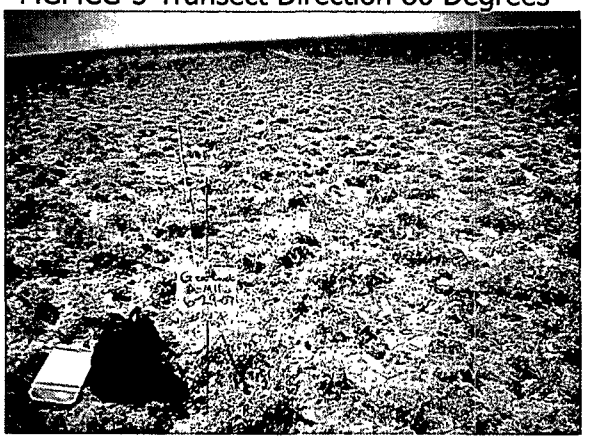
MGMCG-4 Transect Direction 320 Degrees



MGMCG-5 Transect Direction 80 Degrees



MGMCG-9 Transect Direction 330 Degrees



MGMCG-11 Transect Direction 150 Degrees

NO PHOTO AVAILABLE

MGMCG-14 Transect Direction 0 Degrees

MGMCG-15 Transect Direction 0 Degrees

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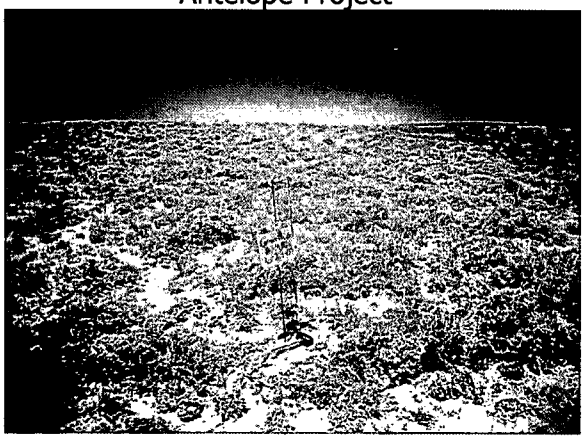

MGMCG-16 Transect Direction 80 Degrees

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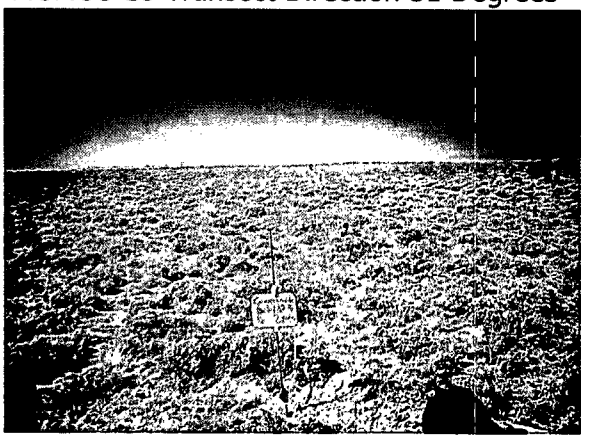
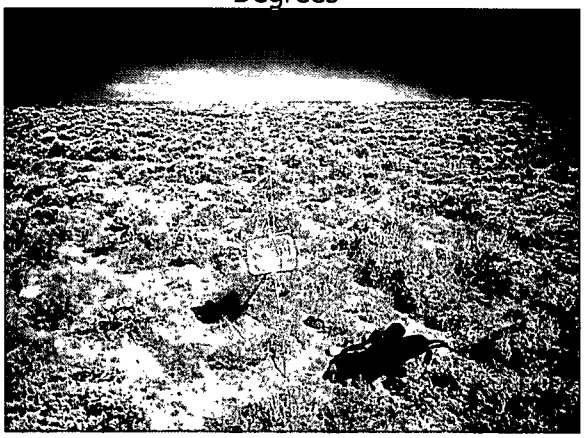
MGMCG-18 Transect Direction 31 Degrees

MGMCG-19 Transect Direction 210 Degrees



MGMCG-23 Transect Direction 190 Degrees



MGMCG-24 Transect Direction 320 Degrees

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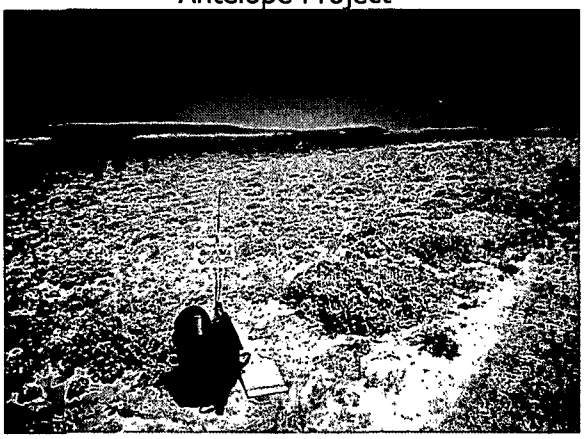
MGMCG-26 Transect Direction 0 Degrees

Antelope Project

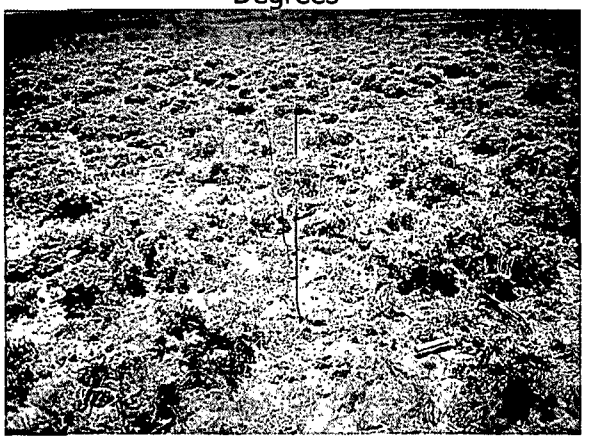


MGMCG-31 Transect Direction 50 Degrees

MGMCG-32 Transect Direction 90 Degrees

MGMCG-34 Transect Direction 310 Degrees

MGMCG-35 Transect Direction 330 Degrees



MGMCG-37 Transect Direction 70 Degrees

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MGMCG-40 Transect Direction 150 Degrees

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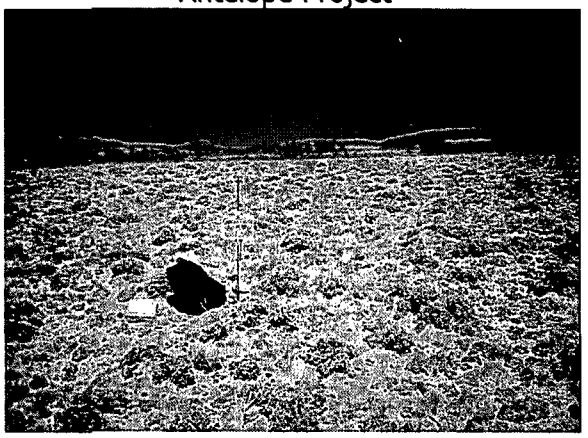


MGMCG-44 Transect Direction 340 Degrees

NO PHOTO AVAILABLE

MGMCG-46 Transect Direction 0 Degrees

NO PHOTO AVAILABLE

BSS-1 Transect Direction 260 Degrees

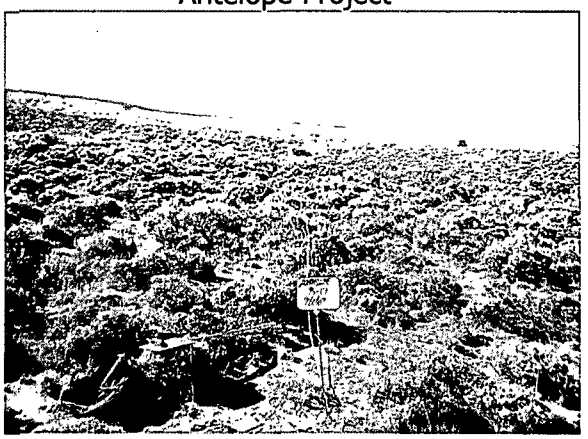
BSS-9 Transect Direction 45 Degrees

NO PHOTO AVAILABLE

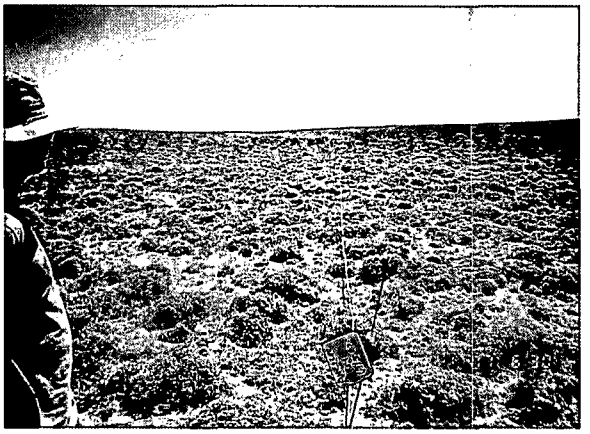
BSS-11 Transect Direction 290 Degrees

BSS-13 Transect Direction 195 Degrees

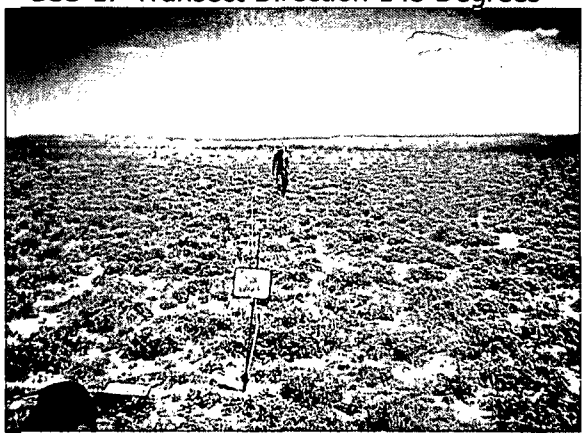
Antelope Project



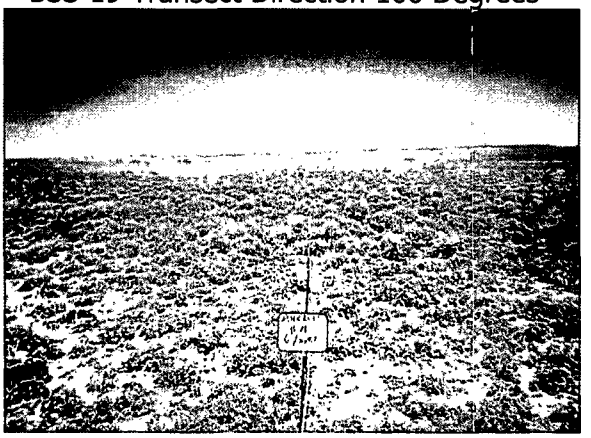
BSS-17 Transect Direction 145 Degrees



BSS-19 Transect Direction 100 Degrees



BSS-20 Transect Direction 105 Degrees



BSS-21 Transect Direction 55 Degrees

NO PHOTO AVAILABLE

BSS-27 Transect Direction 190 Degrees

BSS-28 Transect Direction 350 Degrees

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BSS-29 Transect Direction 230 Degrees

BSS-30 Transect Direction 40 Degrees

NO PHOTO AVAILABLE

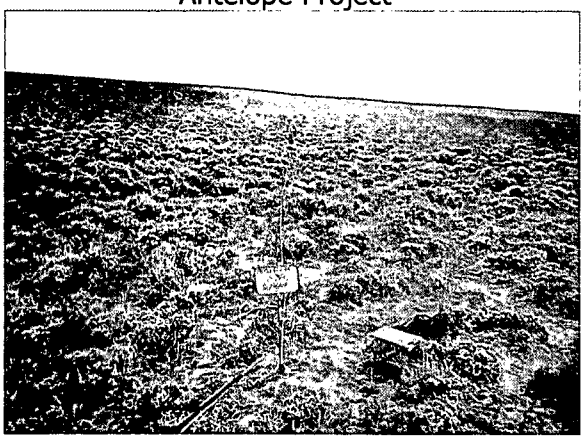
BSS-34 Transect Direction 290 Degrees

BSS-31 Transect Direction 165 Degrees

BSS-35 Transect Direction 25 Degrees

BSS-36 Transect Direction 345 Degrees

Antelope Project



BSS-39 Transect Direction 195 Degrees

NO PHOTO AVAILABLE

BSS-41 Transect Direction 300 Degrees

BSS-42 Transect Direction 310 Degrees

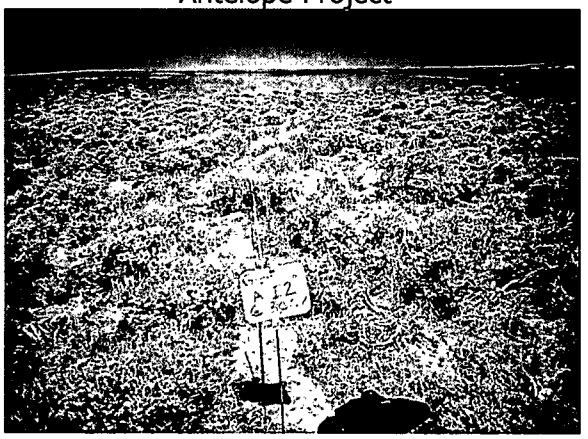
BSS-44 Transect Direction 345 Degrees

NO PHOTO AVAILABLE

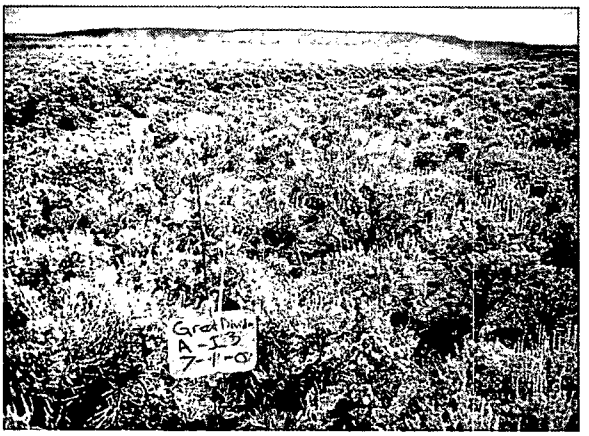
BSS-47 Transect Direction 330 Degrees

BSS-50 Transect Direction 215 Degrees

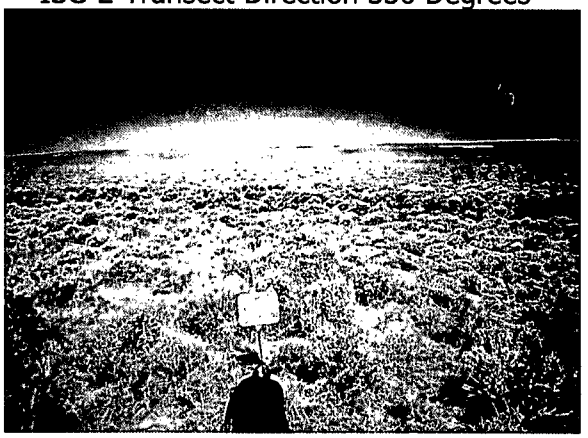
Antelope Project



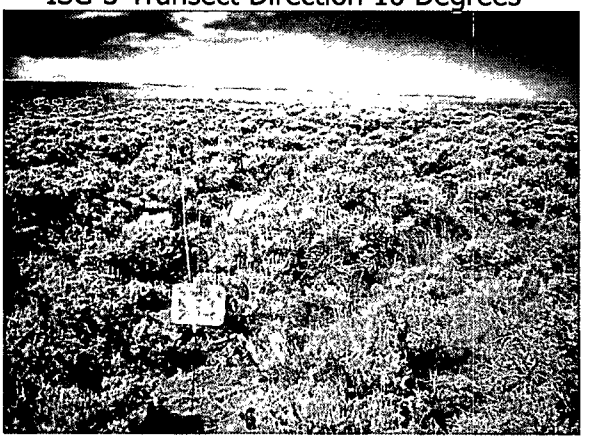
ISG-2 Transect Direction 330 Degrees



ISG-3 Transect Direction 10 Degrees



ISG-5 Transect Direction 290 Degrees



ISG-9 Transect Direction 220 Degrees

NO PHOTO AVAILABLE

ISG-11 Transect Direction 0 Degrees

ISG-12 Transect Direction 20 Degrees

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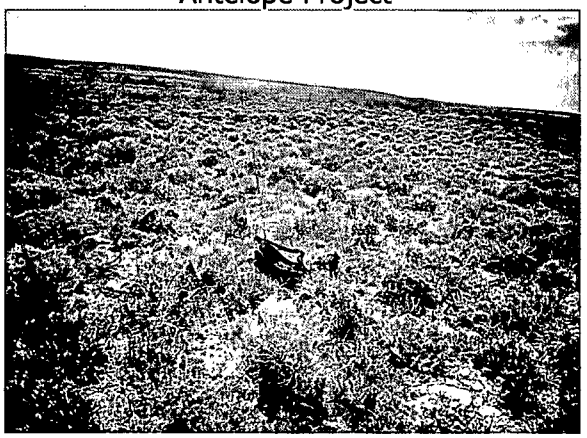
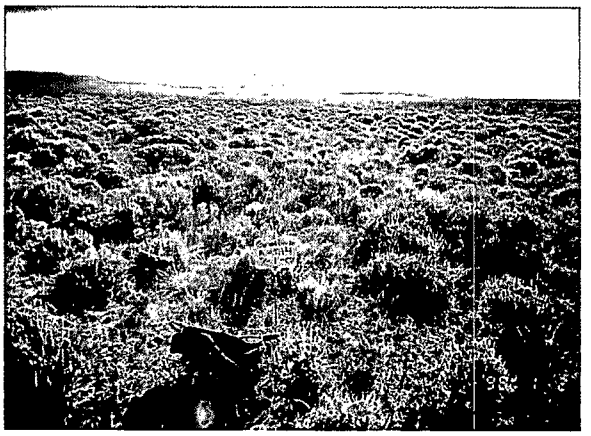
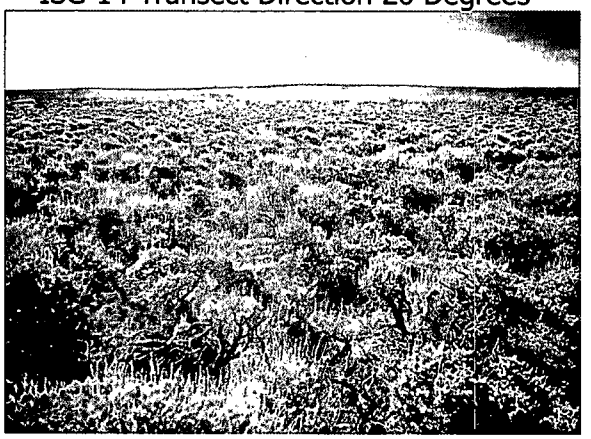


ISG-13 Transect Direction 200 Degrees

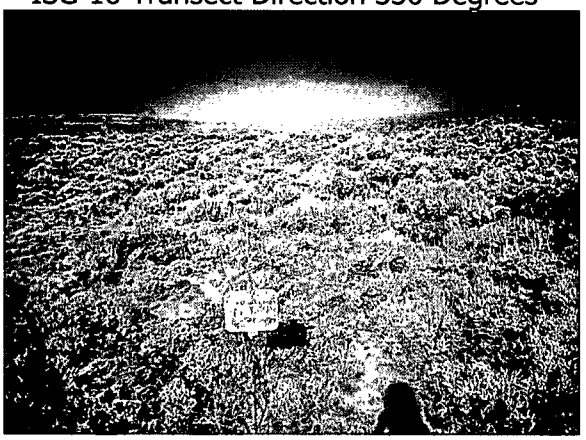


ISG-14 Transect Direction 20 Degrees

ISG-16 Transect Direction 330 Degrees



ISG-20 Transect Direction 110 Degrees



ISG-21 Transect Direction 280 Degrees

ISG-27 Transect Direction 210 Degrees

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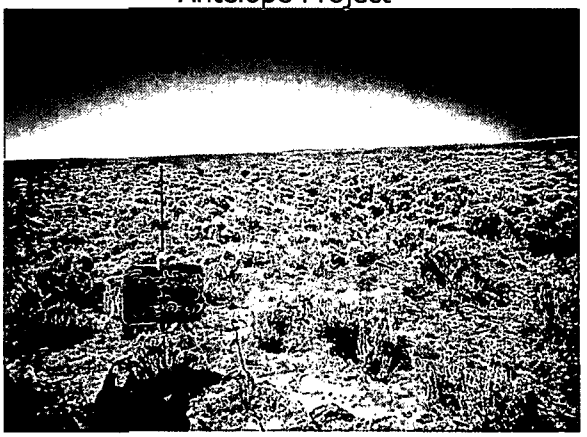
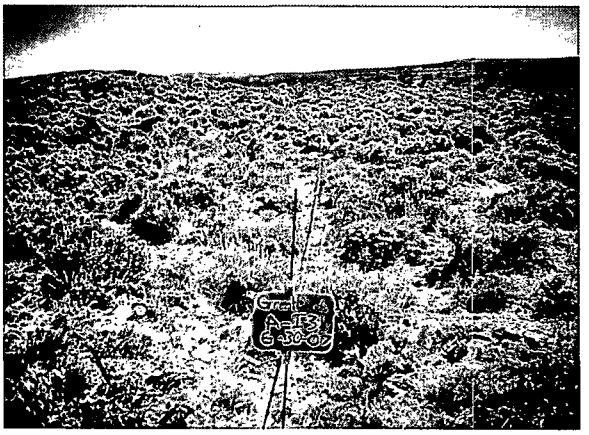
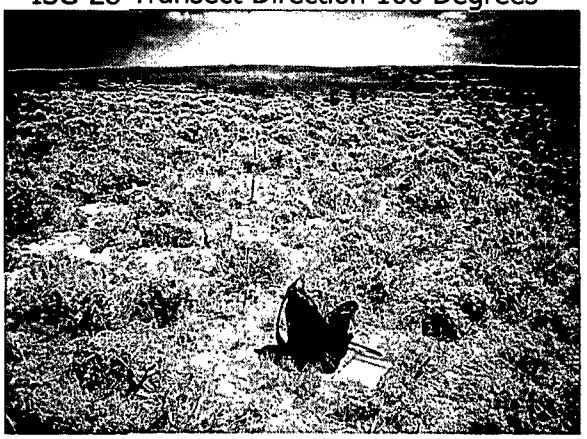


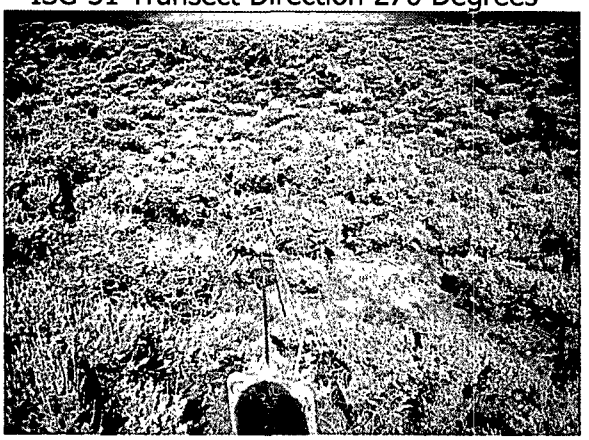
ISG-28 Transect Direction 160 Degrees



ISG-31 Transect Direction 270 Degrees

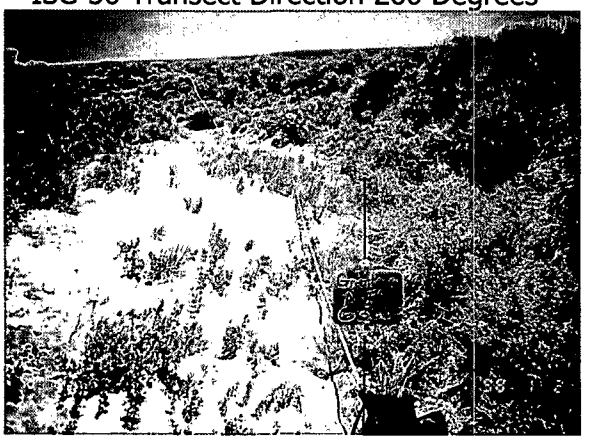


ISG-35 Transect Direction 100 Degrees



ISG-36 Transect Direction 260 Degrees

ISG-40 Transect Direction 60 Degrees



ISG-41 Transect Direction 100 Degrees

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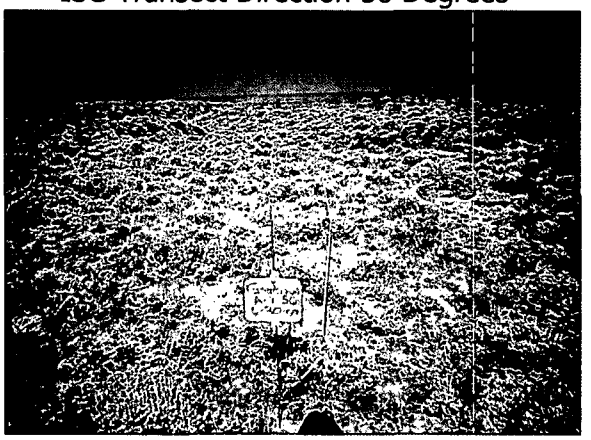
ISG-44 Transect Direction 90 Degrees

NO PHOTO AVAILABLE

ISG Transect Direction 50 Degrees

ISG-49 Transect Direction 220 Degrees



ISG-50 Transect Direction 290 Degrees

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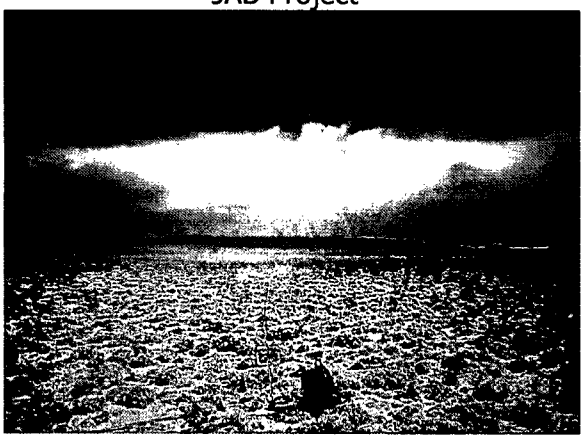
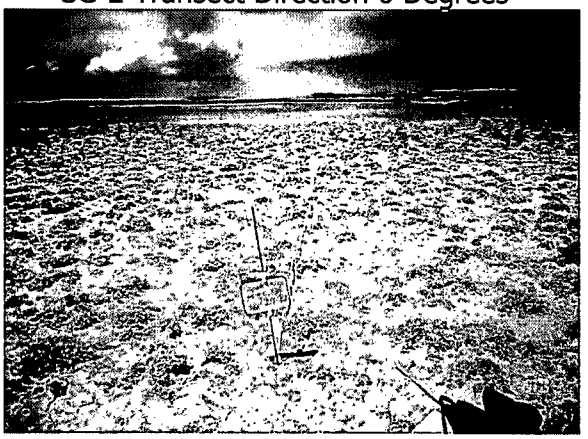


SG-2 Transect Direction 0 Degrees

SG-5 Transect Direction 350 Degrees

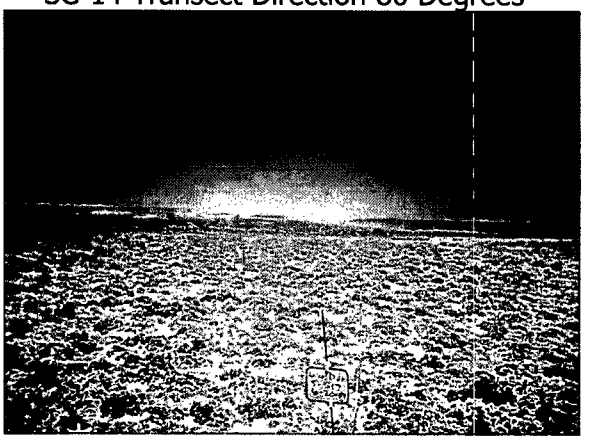


SG-13 Transect Direction 0 Degrees

SG-14 Transect Direction 80 Degrees

NO PHOTO AVAILABLE

SG-15 Transect Direction 230 Degrees



SG-17 Transect Direction 350 Degrees

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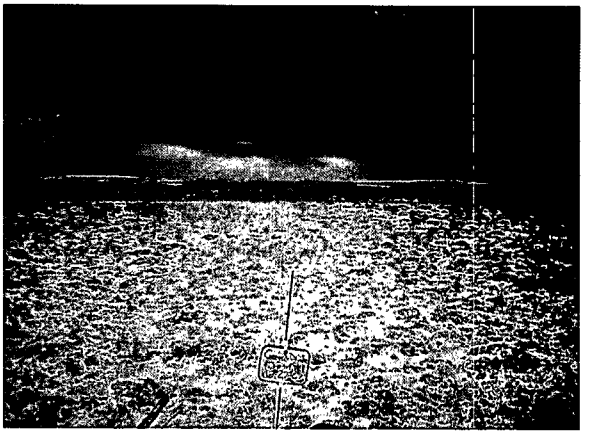
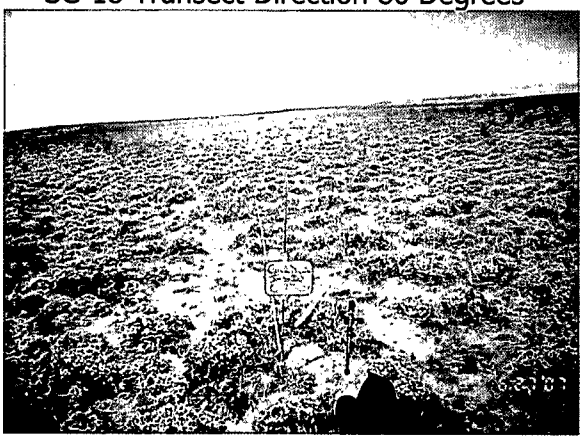
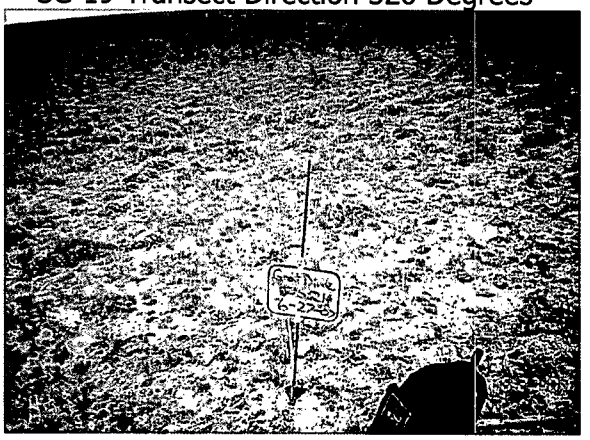
SG-18 Transect Direction 80 Degrees



SG-19 Transect Direction 320 Degrees

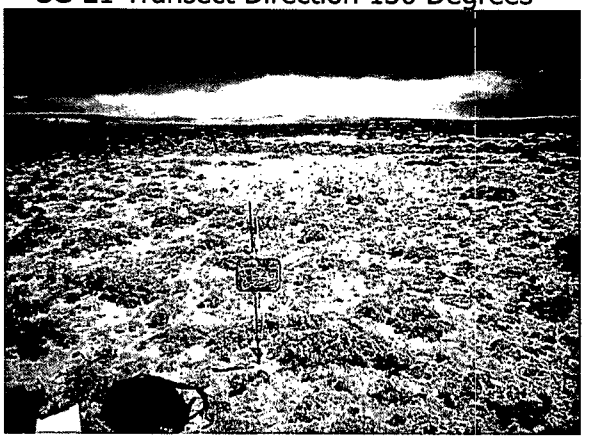


SG-20 Transect Direction 260 Degrees



SG-21 Transect Direction 130 Degrees

SG-25 Transect Direction 240 Degrees



SG-26 Transect Direction 50 Degrees

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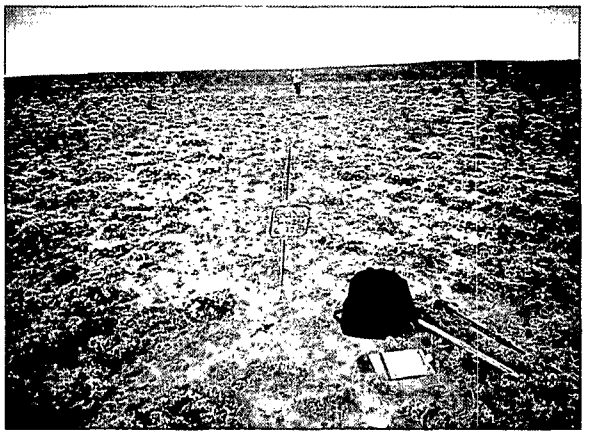
SG-27 Transect Direction 10 Degrees



SG-28 Transect Direction 230 Degrees

SG-30 Transect Direction 160 Degrees

SG-39 Transect Direction 190 Degrees

NO PHOTO AVAILABLE

SG-41 Transect Direction 300 Degrees

SG-42 Transect Direction 120 Degrees

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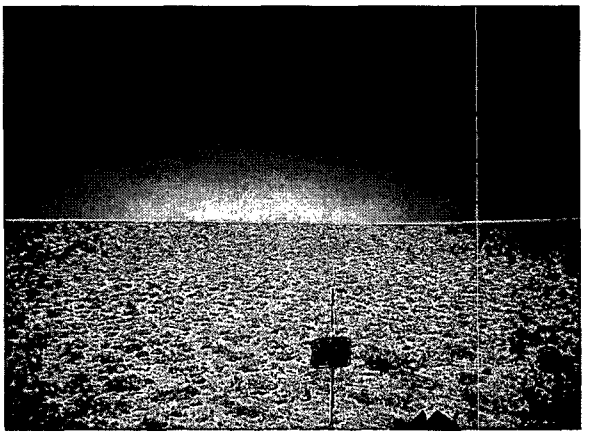
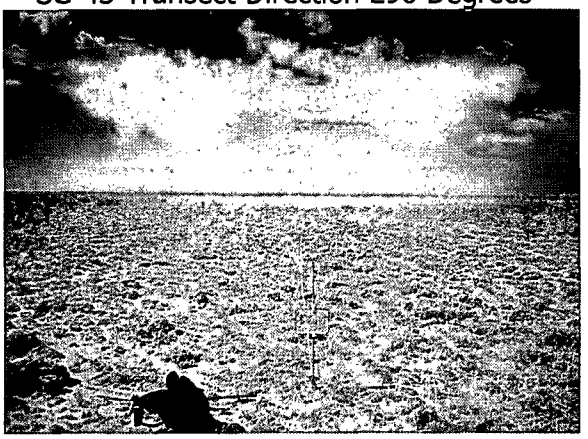
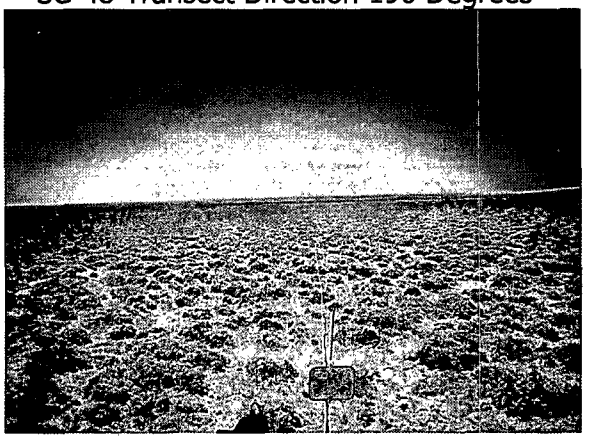
SG-43 Transect Direction 290 Degrees



SG-48 Transect Direction 190 Degrees



SG-49 Transect Direction 200 Degrees



SG-50 Transect Direction 250 Degrees

MGMCG-1 Transect Direction 220 Degrees

MGMCG-3 Transect Direction 340 Degrees

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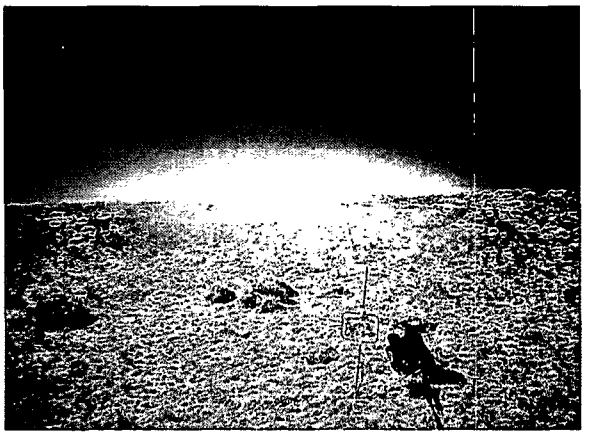
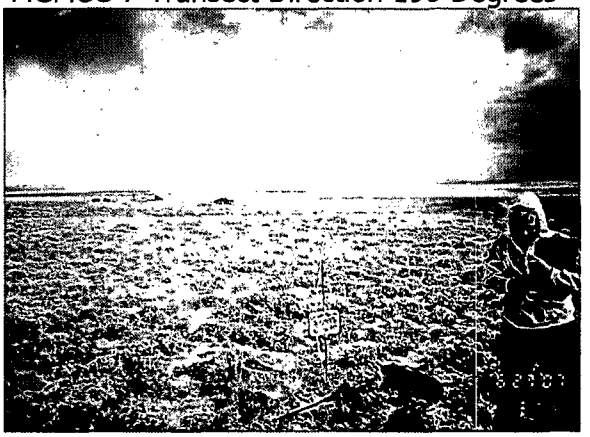
MGMCG-5 Transect Direction 50 Degrees

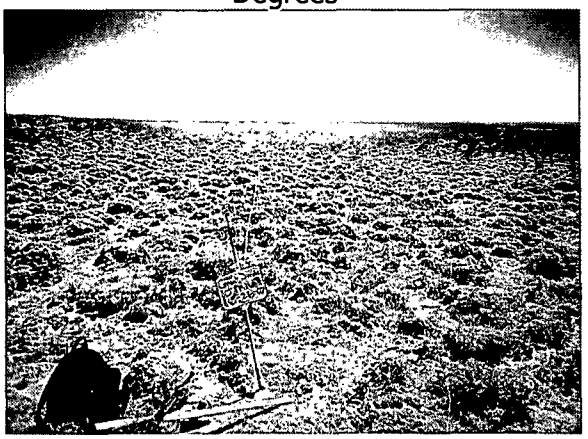


MGMCG-7 Transect Direction 190 Degrees

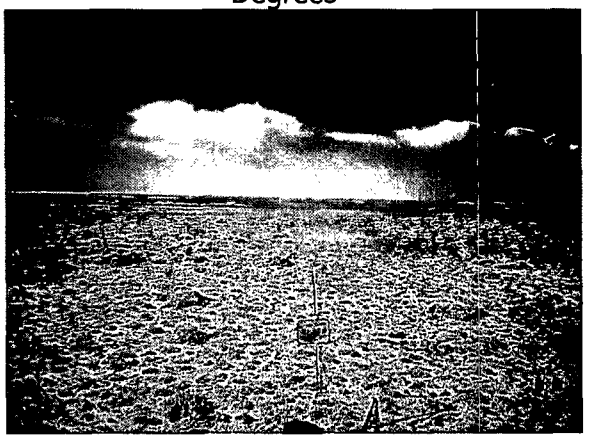
MGMCG-11 Transect Direction 300 Degrees



MGMCG-12 Transect Direction 330 Degrees



MGMCG-16 Transect Direction 40 Degrees



MGMCG-20 Transect Direction 180 Degrees

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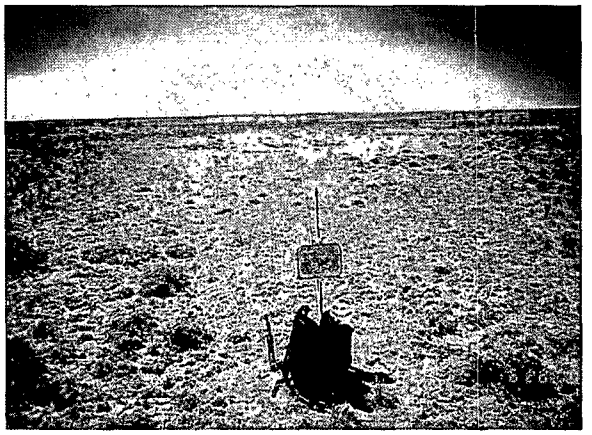
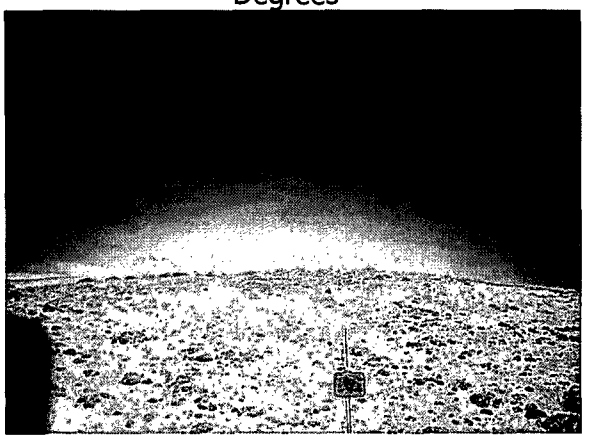
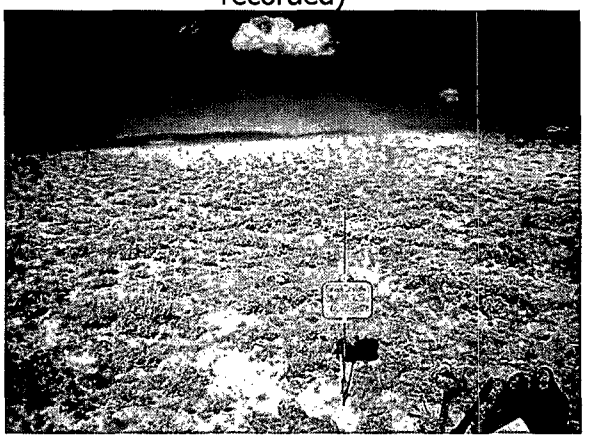
MGMCG-23 Transect Direction 180 Degrees



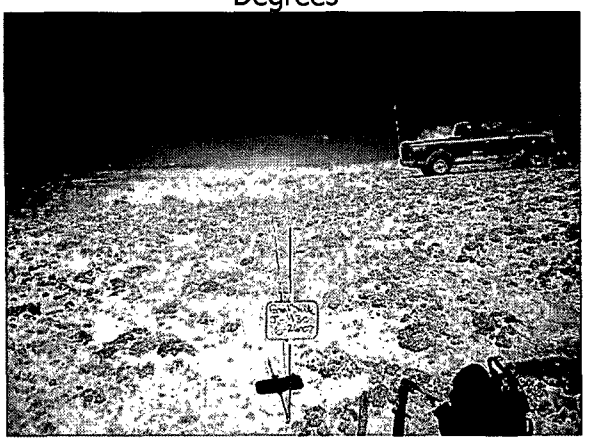
MGMCG-24 Transect Direction (Not recorded)



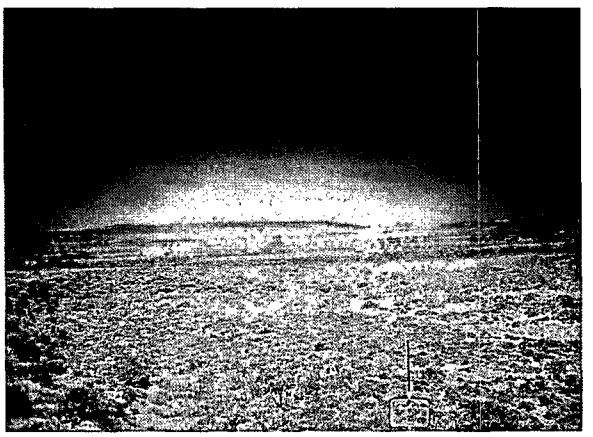
MGMCG-27 Transect Direction 170 Degrees



MGMCG-28 Transect Direction 50 Degrees



MGMCG-30 Transect Direction 110 Degrees



MGMCG-31 Transect Direction 30 Degrees

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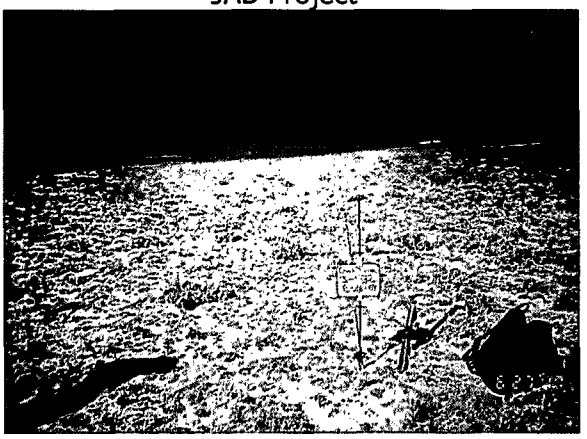
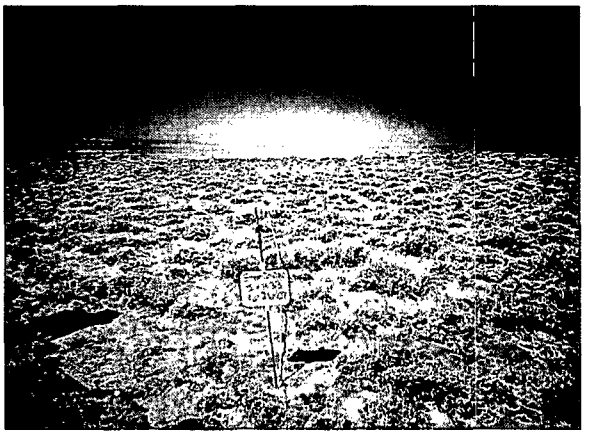
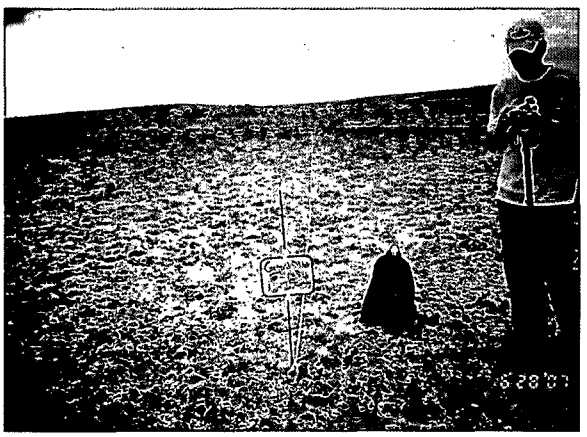


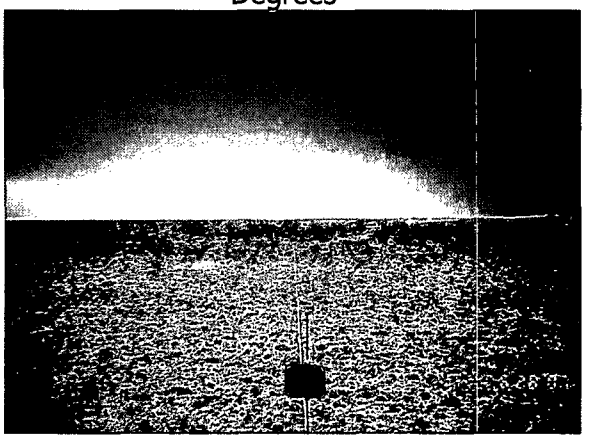
MGMCG-32 Transect Direction 40 Degrees



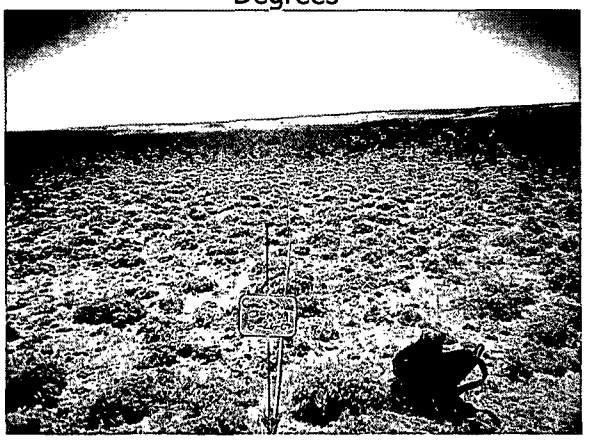
MGMCG-33 Transect Direction 220 Degrees



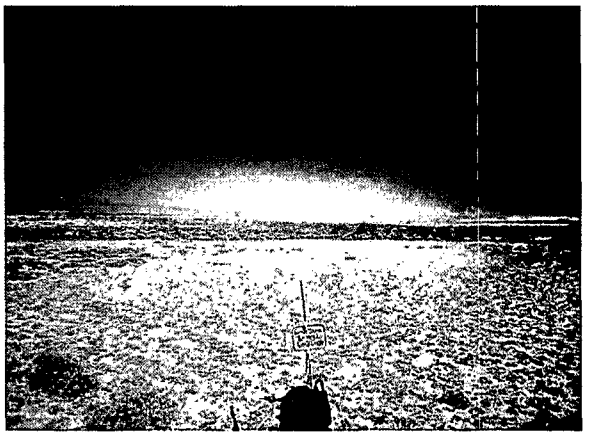
MGMCG-36 Transect Direction 100 Degrees



MCMCG-38 Transect Direction 130 Degrees



MGMCG-39 Transect Direction 50 Degrees



MGMCG-42 Transect Direction 80 Degrees

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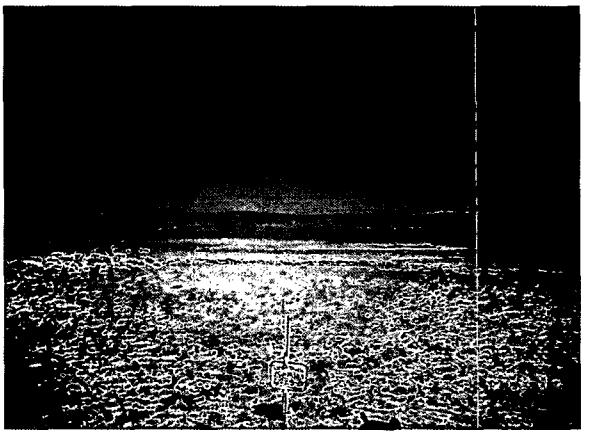
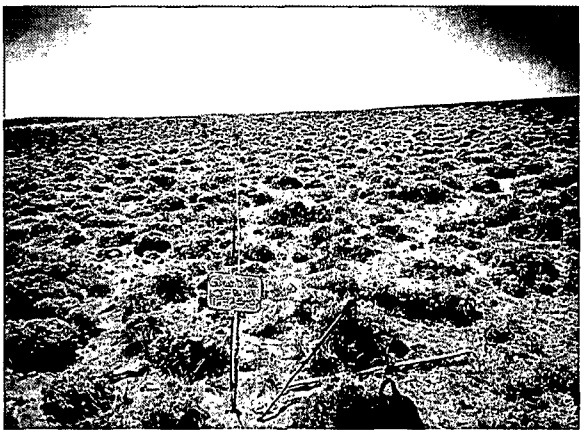
MGMCG-43 Transect Direction 30 Degrees

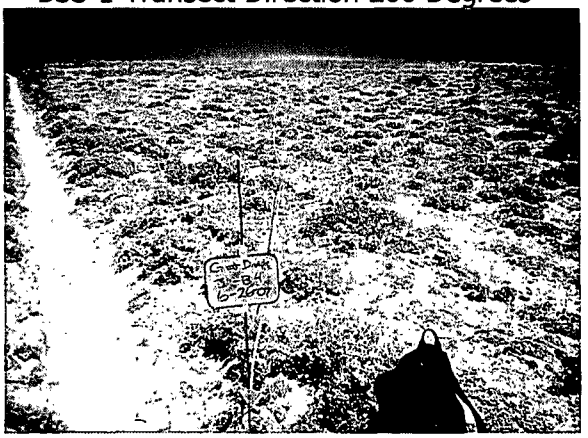


MGMCG-50 Transect Direction 220 Degrees



BSS-1 Transect Direction 260 Degrees

BSS-3 Transect Direction 340 Degrees



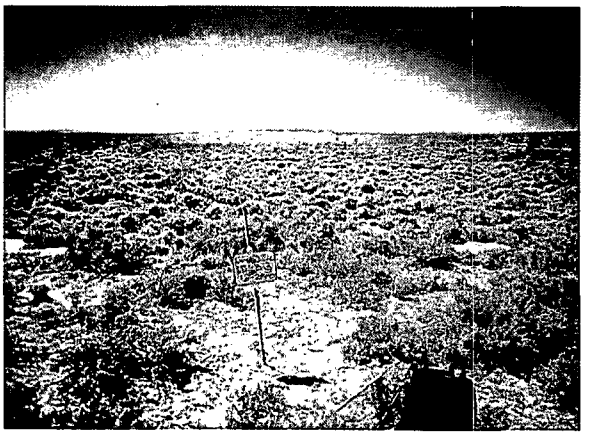
BSS-4 Transect Direction 90 Degrees

NO PHOTO AVAILABLE

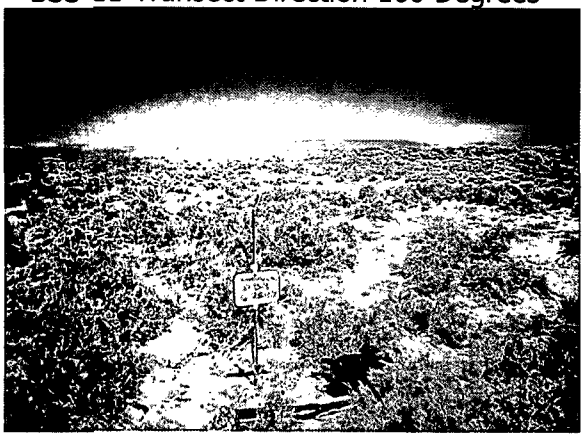
BSS-5 Transect Direction 220 Degrees

JAB Project

BSS-11 Transect Direction 160 Degrees

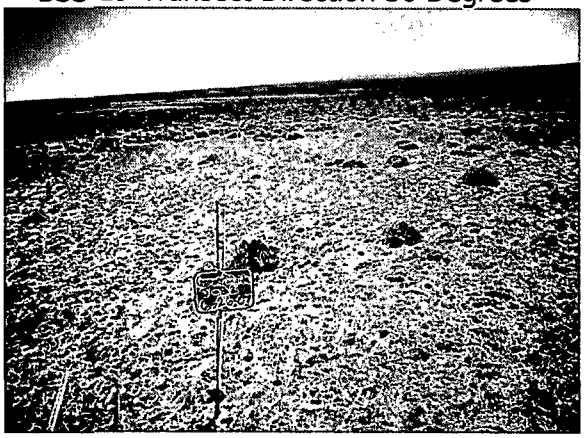


BSS-13 Transect Direction 320 Degrees

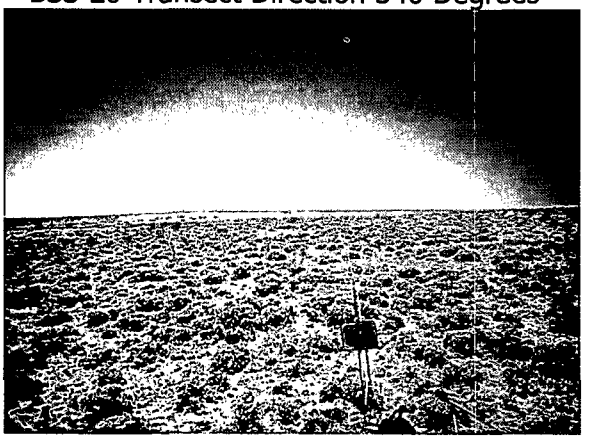


BSS-19 Transect Direction 30 Degrees

BSS-20 Transect Direction 340 Degrees



BSS-21 Transect Direction 50 Degrees



BSS-26 Transect Direction 120 Degrees

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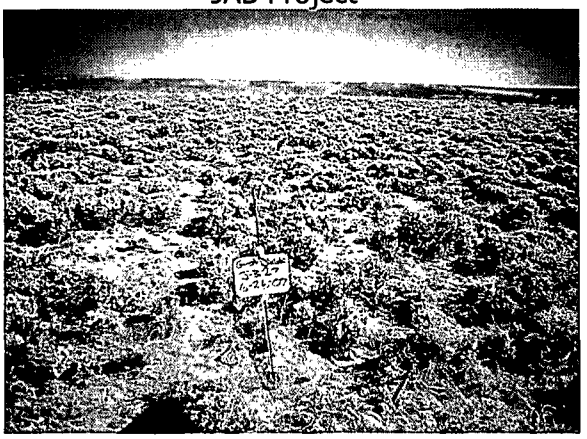
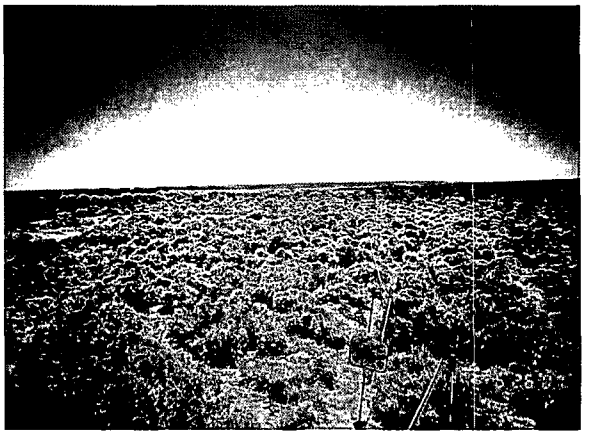


BSS-27 Transect Direction 340 Degrees

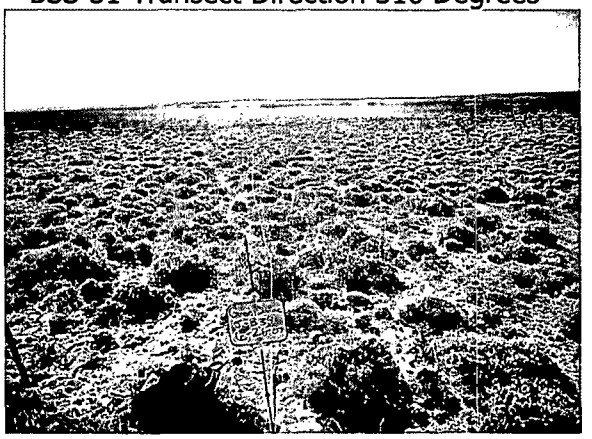


BSS-29 Transect Direction 230 Degrees

BSS-30 Transect Direction 200 Degrees

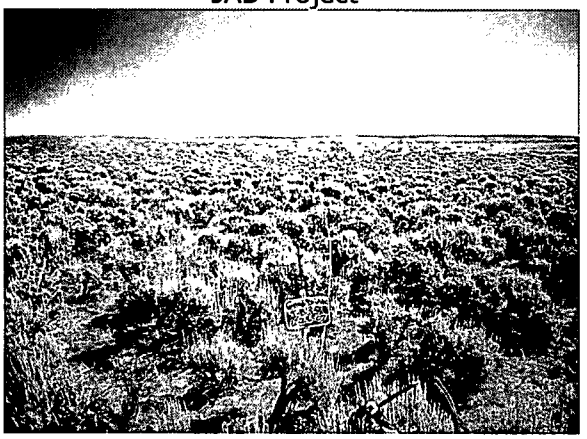
BSS-31 Transect Direction 310 Degrees

BSS-33 Transect Direction 290 Degrees

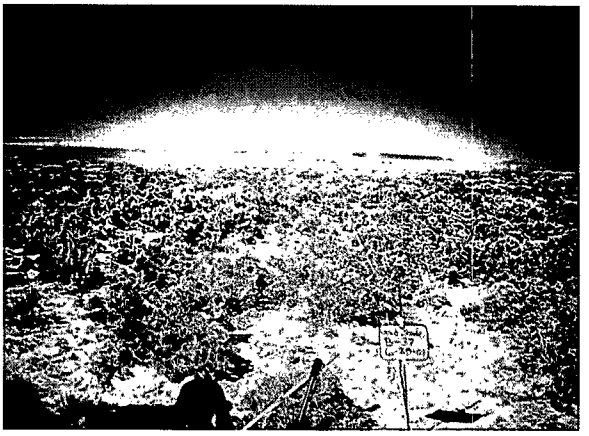


BSS-34 Transect Direction 100 Degrees

JAB Project

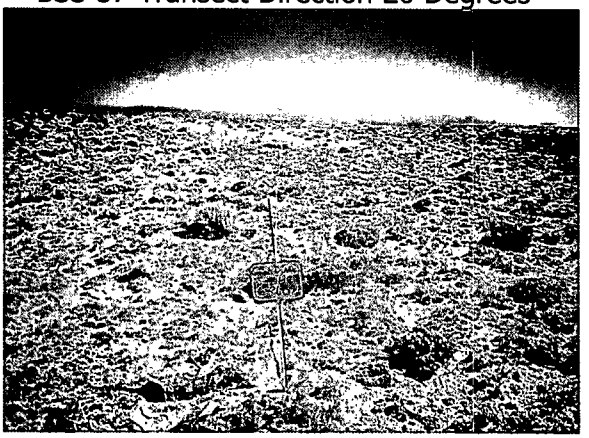


BSS-35 Transect Direction 20 Degrees

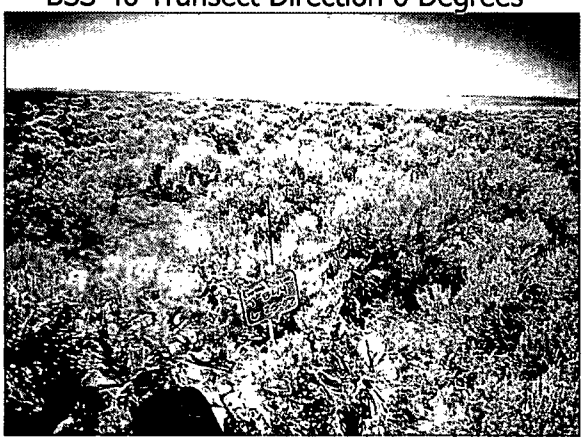


BSS-37 Transect Direction 20 Degrees

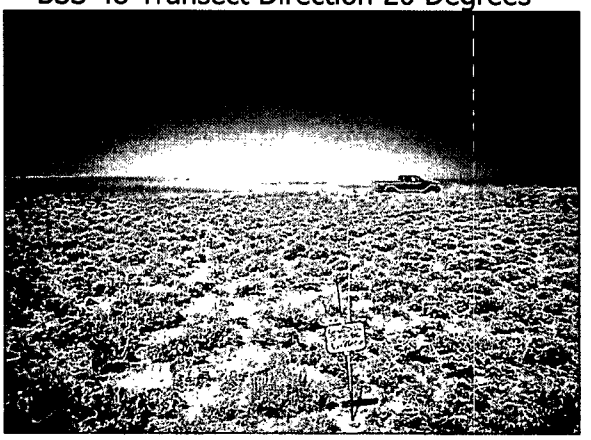
BSS-46 Transect Direction 0 Degrees



BSS-48 Transect Direction 20 Degrees



BSS-49 Transect Direction 270 Degrees



BSS-50 Transect Direction 280 Degrees

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ADDENDUM 3.5-F

ANTELOPE AND JAB
VEGETATION RAW DATA SUMMARIES

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Project Name Energy Metals Great Divide Antelope Project
Vegetation Type Baseline
Vegetation Type Sagebrush Grassland
Vegetation Parameter Cover
Number of Plots 23

Category/Species	Min	Max	S-2	S-5	S-10	S-11	S-16	S-18	S-19	S-21	S-23	S-24	S-25	S-26
Bare Ground	N/A	N/A	10.00	10.00	8.00	13.00	21.00	12.00	14.00	14.00	12.00	20.00	12.00	12.00
Litter	N/A	N/A	13.00	14.00	12.00	14.00	10.00	11.00	15.00	9.00	15.00	13.00	9.00	12.00
Rock	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00
Total Vegetation	N/A	N/A	27.00	26.00	30.00	23.00	19.00	27.00	21.00	27.00	23.00	16.00	28.00	23.00
Total Ground Cover	N/A	N/A	40.00	40.00	42.00	37.00	29.00	38.00	36.00	36.00	38.00	30.00	38.00	38.00
Species Code														
Cool Season Grasses														
ACHHYM	0.00	4.00	0.00	4.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
ACHPIN	0.00	2.00	2.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYELY	0.00	3.00	0.00	0.00	2.00	0.00	0.00	0.00	1.00	3.00	0.00	0.00	1.00	1.00
ELYHIS	0.00	2.00	0.00	2.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYSPI	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
HESCOM	0.00	5.00	5.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00
KOEMAC	0.00	4.00	3.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
NASVIR	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
POACUS	0.00	4.00	3.00	3.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
POASEC	1.00	12.00	4.00	4.00	7.00	9.00	1.00	4.00	1.00	3.00	9.00	4.00	6.00	3.00
Annual Forbs														
GAYDIF	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Perennial Forbs														
EREHOO	0.00	5.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
ERECAE	0.00	4.00	0.00	0.00	0.00	0.00	1.00	4.00	0.00	0.00	2.00	0.00	0.00	0.00
ERIFLA	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ERIUMB	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHLHOO	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
STEACA	0.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Subshrubs														
ARTFRI	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KRALAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
LINPUN	0.00	2.00	0.00	1.00	0.00	0.00	0.00	2.00	0.00	0.00	1.00	0.00	0.00	0.00
Perennial Shrubs														
ARTNOV	4.00	18.00	8.00	5.00	12.00	8.00	14.00	16.00	14.00	18.00	7.00	12.00	18.00	10.00
ARTTRI	0.00	5.00	2.00	2.00	1.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
CHRVIS	0.00	3.00	0.00	2.00	0.00	0.00	1.00	0.00	2.00	0.00	3.00	0.00	3.00	2.00

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Project Name	Energy Metals Great Divide Antelope Project
Vegetation Type	Baseline
Vegetation Type	Sagebrush Grassland
Vegetation Parameter	Cover
Number of Plots	23

Category/Species	Min	Max	S-26B	S-27	S-28	S-32	S-34	S-35	S-37	S-42	S-47	S-48	S-49	Mean	Standard Deviation
Bare Ground	N/A	N/A	14.00	17.00	9.00	22.00	15.00	18.00	13.00	14.00	14.00	11.00	15.00	13.91	3.67
Litter	N/A	N/A	12.00	5.00	14.00	9.00	6.00	9.00	10.00	11.00	10.00	13.00	8.00	11.04	2.72
Rock	N/A	N/A	0.00	5.00	0.00	3.00	0.00	2.00	0.00	0.00	1.00	0.00	2.00	0.70	1.36
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
Total Vegetation	N/A	N/A	24.00	22.00	27.00	16.00	29.00	21.00	27.00	25.00	25.00	26.00	25.00	24.22	3.75
Total Ground Cover	N/A	N/A	36.00	33.00	41.00	28.00	35.00	32.00	37.00	36.00	36.00	39.00	35.00	36.09	3.67
Species Code															
Cool Season Grasses															
ACHHYM	0.00	4.00	0.00	1.00	3.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.61	1.03
ACHPIN	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.46
ELYELY	0.00	3.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.48	0.79
ELYHIS	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.46
ELYSPI	0.00	3.00	0.00	0.00	0.00	0.00	0.00	3.00	1.00	3.00	0.00	1.00	0.00	0.39	0.89
HESCOM	0.00	5.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.48	1.08
KOEMAC	0.00	4.00	0.00	3.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	0.00	4.00	0.65	1.19
NASVIR	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.09	0.29
POACUS	0.00	4.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	1.20
POASEC	1.00	12.00	12.00	1.00	5.00	3.00	1.00	4.00	2.00	3.00	4.00	10.00	3.00	4.48	3.04
Annual Forbs															
GAYDIF	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.21
Perennial Forbs															
EREHOO	0.00	5.00	1.00	5.00	2.00	1.00	3.00	2.00	2.00	1.00	3.00	0.00	1.00	1.13	1.25
ERECAE	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.39	0.94
ERIFLA	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.13	0.34
ERISPP	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.21
ERIUMB	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.04	0.21
PHLHOO	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.45
STEACA	0.00	3.00	1.00	2.00	0.00	0.00	3.00	1.00	1.00	0.00	1.00	0.00	1.00	0.48	0.79
Perennial Subshrubs															
ARTFRI	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.21
KRALAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.21
LINPUN	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.30	0.63
Perennial Shrubs															
ARTNOV	4.00	18.00	5.00	6.00	8.00	9.00	18.00	4.00	18.00	15.00	9.00	9.00	13.00	11.13	4.59
ARTTRI	0.00	5.00	2.00	0.00	4.00	0.00	0.00	5.00	0.00	0.00	5.00	4.00	0.00	1.30	1.82
CHRVIS	0.00	3.00	1.00	2.00	0.00	0.00	2.00	1.00	0.00	2.00	0.00	0.00	0.00	0.91	1.08

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Project Name	**Energy Metals Great Divide Antelope Project**
Vegetation Type	**Baseline**
Vegetation Type	**Breaks Grassland**
Vegetation Parameter	**Cover**
Number of Plots	**22**

Category/Species	Min	Max	BG-1	BG-2	BG-3	BG-4	BG-5	BG-11	BG-12	BG-19	BG-26	BG-27	BG-28
Bare Ground	N/A	N/A	10.00	11.00	23.00	12.00	19.00	14.00	23.00	18.00	16.00	8.00	24.00
Litter	N/A	N/A	10.00	12.00	10.00	6.00	9.00	11.00	6.00	11.00	11.00	10.00	7.00
Rock	N/A	N/A	5.00	1.00	0.00	5.00	3.00	3.00	2.00	2.00	5.00	2.00	0.00
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Vegetation	N/A	N/A	25.00	26.00	17.00	27.00	19.00	22.00	19.00	19.00	18.00	30.00	19.00
Total Ground Cover	N/A	N/A	40.00	39.00	27.00	38.00	31.00	36.00	27.00	32.00	34.00	42.00	26.00
Species Code													
Cool Season Grasses													
AGRCRI	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYELY	0.00	2.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
ELYSPI	0.00	3.00	2.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	3.00	0.00
HESCOM	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00	2.00	1.00	1.00
KOEMAC	0.00	5.00	5.00	0.00	0.00	1.00	3.00	2.00	1.00	0.00	0.00	1.00	0.00
ORYHYM	0.00	2.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
POASEC	0.00	10.00	1.00	4.00	5.00	2.00	7.00	1.00	4.00	2.00	2.00	10.00	3.00
Annual Forbs													
DESSOP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
GAYDIF	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Forbs													
ANTMIC	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EREHOO	0.00	3.00	2.00	1.00	2.00	3.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
ERECAE	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
ERIFLA	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
PHLHOO	0.00	3.00	1.00	0.00	0.00	0.00	0.00	1.00	3.00	0.00	0.00	0.00	0.00
SEDLAN	0.00	2.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STEACA	0.00	3.00	3.00	0.00	1.00	3.00	1.00	0.00	1.00	0.00	2.00	0.00	1.00
Perennial Subshrubs													
ARTFRI	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ATRGAR	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GUTSAR	0.00	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KRALAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
LINPUN	0.00	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
Perennial Shrubs													
ARTNOV	0.00	9.00	1.00	9.00	0.00	4.00	0.00	3.00	0.00	2.00	0.00	0.00	0.00
ARTTRI	3.00	15.00	9.00	3.00	8.00	13.00	7.00	8.00	7.00	10.00	6.00	12.00	12.00
CHRVIS	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	1.00	0.00	1.00	0.00

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Project Name	**Energy Metals Great Divide Antelope Project**
Vegetation Type	**Baseline**
Vegetation Type	**Breaks Grassland**
Vegetation Parameter	**Cover**
Number of Plots	**22**

Category/Species	Min	Max	BG-30	BG-34	BG-35	BG-35B	BG-36	BG-37	BG-43	BG-44	BG-45	BG-47	BG-50	Mean	Standard Deviation
Bare Ground	N/A	N/A	15.00	21.00	23.00	9.00	20.00	9.00	10.00	16.00	15.00	13.00	10.00	15.41	5.27
Litter	N/A	N/A	6.00	8.00	9.00	10.00	9.00	12.00	14.00	5.00	10.00	8.00	12.00	9.36	2.34
Rock	N/A	N/A	8.00	0.00	2.00	7.00	1.00	7.00	0.00	5.00	3.00	6.00	0.00	3.05	2.57
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Vegetation	N/A	N/A	21.00	21.00	16.00	24.00	20.00	22.00	26.00	24.00	22.00	23.00	28.00	22.18	3.74
Total Ground Cover	N/A	N/A	35.00	29.00	27.00	41.00	30.00	41.00	40.00	34.00	35.00	37.00	40.00	34.59	5.27
Species Code															
Cool Season Grasses															
AGRCRI	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.05	0.21
ELYELY	0.00	2.00	1.00	0.00	0.00	0.00	2.00	0.00	1.00	0.00	0.00	0.00	1.00	0.36	0.58
ELYSPI	0.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.55	0.80
HESCOM	0.00	2.00	1.00	1.00	0.00	0.00	2.00	0.00	1.00	1.00	0.00	2.00	1.00	0.73	0.77
KOEMAC	0.00	5.00	1.00	2.00	1.00	2.00	0.00	4.00	1.00	1.00	1.00	1.00	0.00	1.23	1.34
ORYHYM	0.00	2.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	0.00	0.23	0.53
POASEC	0.00	10.00	2.00	5.00	4.00	6.00	2.00	6.00	7.00	2.00	6.00	0.00	6.00	3.95	2.50
Annual Forbs															
DESSOP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
GAYDIF	0.00	2.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	2.00	0.23	0.61
Perennial Forbs															
ANTMIC	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
EREHOO	0.00	3.00	1.00	1.00	0.00	3.00	2.00	2.00	0.00	1.00	2.00	1.00	0.00	1.14	0.94
ERECAE	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.18	0.39
ERIFLA	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.05	0.21
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
PHLHOO	0.00	3.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.32	0.72
SEDLAN	0.00	2.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	2.00	0.00	0.00	0.00	0.18	0.50
STEACA	0.00	3.00	1.00	0.00	2.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.82	0.96
Perennial Subshrubs															
ARTFRI	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
ATRGAR	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.05	0.21
GUTSAR	0.00	3.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.32	0.89
KRALAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
LINPUN	0.00	5.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.45	1.14
Perennial Shrubs															
ARTNOV	0.00	9.00	2.00	0.00	0.00	1.00	1.00	0.00	5.00	1.00	1.00	0.00	8.00	1.73	2.60
ARTTRI	3.00	15.00	11.00	10.00	8.00	10.00	7.00	8.00	8.00	15.00	7.00	13.00	5.00	8.95	2.89
CHRVIS	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.41	0.85

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Project Name Energy Metals Great Divide Antelope Project
Vegetation Type Baseline
Vegetation Type Mixed Grass/Mat-Cushion Grassland
Vegetation Parameter Cover
Number of Plots 22

Category/Species	Min	Max	M-1	M-3	M-4	M-5	M-9	M-11	M-14	M-15	M-16	M-18	M-19
Bare Ground	N/A	N/A	16.00	16.00	23.00	16.00	18.00	18.00	22.00	17.00	17.00	27.00	16.00
Litter	N/A	N/A	13.00	13.00	4.00	12.00	10.00	9.00	3.00	13.00	14.00	3.00	9.00
Rock	N/A	N/A	0.00	7.00	1.00	1.00	4.00	0.00	0.00	0.00	5.00	7.00	10.00
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Vegetation	N/A	N/A	21.00	14.00	22.00	21.00	18.00	23.00	25.00	20.00	14.00	13.00	15.00
Total Ground Cover	N/A	N/A	34.00	34.00	27.00	34.00	32.00	32.00	28.00	33.00	33.00	23.00	34.00
Species Code													
Cool Season Grasses													
ORYHYM	0.00	2.00	0.00	0.00	1.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
AGRCRI	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYELY	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYHIS	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYSPI	0.00	3.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	1.00
HESCOM	0.00	3.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	3.00	2.00	0.00	1.00
KOEMAC	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
POACUS	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
POASEC	0.00	6.00	5.00	0.00	5.00	5.00	4.00	3.00	6.00	2.00	5.00	5.00	3.00
Annual Forbs													
DESSOP	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Forbs													
ANTMIC	0.00	2.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EREHOO	0.00	4.00	2.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	3.00
ERECAE	0.00	3.00	0.00	0.00	0.00	0.00	0.00	1.00	3.00	1.00	1.00	0.00	0.00
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FABSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
HAPSPP	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00
PHLHOO	0.00	4.00	1.00	1.00	4.00	2.00	1.00	0.00	2.00	1.00	0.00	2.00	1.00
PHLLON	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHLMUS	0.00	4.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEDLAN	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
STEACA	0.00	5.00	0.00	1.00	4.00	1.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
STRLON	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TRIHYB	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Subshrubs													
ARTFRI	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
ARTPED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GUTSAR	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HYMSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LINPUN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Perennial Shrubs													
ARTNOV	0.00	7.00	7.00	0.00	6.00	2.00	5.00	7.00	0.00	6.00	2.00	1.00	1.00
ARTTRI	0.00	11.00	5.00	1.00	0.00	9.00	6.00	6.00	11.00	3.00	2.00	0.00	5.00
CHRVIS	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Succulents													
OPUPOL	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00

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Project Name Energy Metals Great Divide Antelope Project
Vegetation Type Baseline
Vegetation Type Mixed Grass/Mat-Cushion Grassland
Vegetation Parameter Cover
Number of Plots 22

Category/Species	Min	Max	M-23	M-24	M-26	M-31	M-32	M-34	M-35	M-37	M-40	M-44	M-46	Mean	Standard Deviation
Bare Ground	N/A	N/A	16.00	13.00	20.00	11.00	15.00	19.00	17.00	17.00	28.00	12.00	23.00	18.05	4.34
Litter	N/A	N/A	13.00	14.00	2.00	18.00	18.00	14.00	11.00	7.00	5.00	9.00	4.00	9.91	4.82
Rock	N/A	N/A	3.00	3.00	8.00	7.00	2.00	1.00	5.00	9.00	0.00	9.00	6.00	4.00	3.44
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Vegetation	N/A	N/A	18.00	20.00	20.00	14.00	15.00	16.00	17.00	17.00	17.00	20.00	17.00	18.05	3.26
Total Ground Cover	N/A	N/A	34.00	37.00	30.00	39.00	35.00	31.00	33.00	33.00	22.00	38.00	27.00	31.95	4.34
Species Code															
Cool Season Grasses															
ORYHYM	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.18	0.50
AGRCRI	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.09	0.43
ELYELY	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
ELYHIS	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.05	0.21
ELYSPI	0.00	3.00	0.00	1.00	0.00	3.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.55	0.86
HESCOM	0.00	3.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	3.00	0.73	1.03
KOEMAC	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.27	0.46
POACUS	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
POASEC	0.00	6.00	3.00	4.00	5.00	3.00	6.00	1.00	2.00	2.00	3.00	2.00	4.00	3.55	1.63
Annual Forbs															
DESSOP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.09	0.29
Perennial Forbs															
ANTMIC	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.14	0.47
EREHOO	0.00	4.00	0.00	0.00	2.00	0.00	0.00	1.00	0.00	3.00	1.00	4.00	2.00	1.00	1.31
ERECAE	0.00	3.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.41	0.80
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.05	0.21
FABSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
HAPSPP	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.64
PHLHOO	0.00	4.00	1.00	0.00	0.00	0.00	1.00	2.00	2.00	0.00	2.00	1.00	1.00	1.14	0.99
PHLLON	0.00	3.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.64
PHLMUS	0.00	4.00	1.00	0.00	0.00	2.00	0.00	0.00	1.00	1.00	0.00	2.00	0.00	0.50	1.01
SEDLAN	0.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.27	0.46
STEACA	0.00	5.00	0.00	0.00	0.00	1.00	3.00	0.00	1.00	0.00	0.00	5.00	0.00	0.91	1.44
STRLON	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
TRIHYB	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.05	0.21
Perennial Subshrubs															
ARTFRI	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.18	0.39
ARTPED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GUTSAR	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
HYMSPP	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
LINPUN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.09	0.29
Perennial Shrubs															
ARTNOV	0.00	7.00	5.00	5.00	7.00	1.00	0.00	5.00	2.00	1.00	0.00	0.00	5.00	3.09	2.67
ARTTRI	0.00	11.00	4.00	5.00	0.00	3.00	3.00	3.00	4.00	3.00	7.00	2.00	1.00	3.77	2.86
CHRVIS	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.18	0.39
Perennial Succulents															
OPUPOL	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.09	0.29

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Project Name Energy Metals Great Divide Antelope Project
Vegetation Type Baseline
Vegetation Type Big Sagebrush Shrubland
Vegetation Parameter Cover
Number of Plots 22

Category/Species	Min	Max	BSS-1	BSS-9	BSS-11	BSS-13	BSS-17	BSS-19	BSS-20	BSS-21	BSS-27	BSS-28	BSS-29
Bare Ground	N/A	N/A	8.00	8.00	4.00	8.00	12.00	22.00	21.00	10.00	10.00	11.00	6.00
Litter	N/A	N/A	19.00	16.00	9.00	18.00	13.00	6.00	7.00	12.00	14.00	12.00	15.00
Rock	N/A	N/A	0.00	0.00	0.00	0.00	0.00	3.00	1.00	0.00	0.00	0.00	0.00
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Vegetation	N/A	N/A	23.00	26.00	37.00	24.00	25.00	19.00	21.00	28.00	26.00	27.00	29.00
Total Ground Cover	N/A	N/A	42.00	42.00	46.00	42.00	38.00	28.00	29.00	40.00	40.00	39.00	44.00
Species Code													
Cool Season Grasses													
ACHHYM	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
ACHPIN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
AGRCRI	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
ELYELY	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00
ELYHIS	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
ELYSPI	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	2.00
HESCOM	0.00	3.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KOEMAC	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
NASVIR	0.00	3.00	3.00	0.00	0.00	1.00	0.00	0.00	0.00	3.00	1.00	0.00	0.00
POASEC	0.00	8.00	0.00	6.00	4.00	6.00	0.00	2.00	1.00	4.00	2.00	3.00	0.00
Annual Forb													
DESSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
GAYDIFF	0.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Perennial Forbs													
ANTMIC	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
ASTPUR	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EREHOO	0.00	4.00	1.00	0.00	0.00	0.00	0.00	3.00	2.00	0.00	0.00	3.00	2.00
ERECAE	0.00	2.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00
ERIUMB	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LUPARG	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
PHLMUS	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
SEDLAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STEACA	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
TRIGYM	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
VIOVAL	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Perennial Subshrubs													
GUTSAR	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LINPUN	0.00	2.00	0.00	2.00	0.00	0.00	0.00	1.00	0.00	0.00	2.00	0.00	0.00
Perennial Shrubs													
ARTNOV	0.00	28.00	9.00	17.00	28.00	12.00	19.00	8.00	13.00	14.00	17.00	12.00	11.00
ARTTRI	0.00	26.00	10.00	0.00	0.00	1.00	3.00	3.00	0.00	3.00	2.00	3.00	7.00
CHRVIS	0.00	4.00	0.00	0.00	1.00	1.00	2.00	0.00	0.00	2.00	1.00	1.00	3.00
Perennial Succulents													
OPUPOL	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Project Name	**Energy Metals Great Divide Antelope Project**
Vegetation Type	**Baseline**
Vegetation Type	**Big Sagebrush Shrubland**
Vegetation Parameter	**Cover**
Number of Plots	**22**

Category/Species	Min	Max	BSS-30	BS-31	BSS-34	BSS-35	BSS-36	BSS-39	BSS-41	BSS-42	BSS-44	BSS-47	BSS-50	Mean	Standard Deviation
Bare Ground	N/A	N/A	16.00	18.00	11.00	10.00	4.00	8.00	6.00	14.00	11.00	4.00	23.00	11.14	5.71
Litter	N/A	N/A	8.00	5.00	11.00	14.00	5.00	13.00	11.00	17.00	14.00	12.00	10.00	11.86	4.02
Rock	N/A	N/A	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.32	0.78
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Vegetation	N/A	N/A	25.00	27.00	28.00	26.00	41.00	29.00	33.00	19.00	25.00	34.00	15.00	26.68	5.92
Total Ground Cover	N/A	N/A	34.00	32.00	39.00	40.00	46.00	42.00	44.00	36.00	39.00	46.00	27.00	38.86	5.71
Species Code															
Cool Season Grasses															
ACHHYM	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.43
ACHPIN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
AGRCRI	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.43
ELYELY	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.23	0.43
ELYHIS	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.18	0.50
ELYSPI	0.00	2.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	0.00	2.00	1.00	0.45	0.74
HESCOM	0.00	3.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	3.00	0.00	1.00	0.00	0.36	0.73
KOEMAC	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.18	0.39
NASVIR	0.00	3.00	0.00	0.00	3.00	1.00	1.00	3.00	0.00	0.00	0.00	0.00	0.00	0.73	1.16
POASEC	0.00	8.00	4.00	8.00	4.00	2.00	2.00	4.00	1.00	2.00	4.00	4.00	5.00	3.09	2.11
Annual Forb															
DESSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
GAYDIFF	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.47
Perennial Forbs															
ANTMIC	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
ASTPUR	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
EREHOO	0.00	4.00	4.00	1.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	1.05	1.33
ERECAE	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.23	0.53
ERIUMB	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
LUPARG	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
PHLMUS	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
SEDLAN	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
STEACA	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.14	0.47
TRIGYM	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.09	0.29
VIOVAL	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.09	0.29
Perennial Subshrubs															
GUTSAR	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.05	0.21
LINPUN	0.00	2.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.50	0.67
Perennial Shrubs															
ARTNOV	0.00	28.00	8.00	0.00	14.00	12.00	22.00	20.00	1.00	10.00	7.00	0.00	1.00	11.59	7.32
ARTTRI	0.00	26.00	0.00	17.00	0.00	5.00	14.00	0.00	26.00	0.00	5.00	25.00	3.00	5.77	7.87
CHRVIS	0.00	4.00	2.00	0.00	3.00	0.00	1.00	0.00	0.00	1.00	4.00	1.00	1.00	1.09	1.15
Perennial Succulents															
OPUPOL	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.09	0.29

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Project Name	Energy Metals Great Divide Antelope Project
Vegetation Type	Baseline
Vegetation Type	Intermittent Stream Grassland
Vegetation Parameter	Cover
Number of Plots	22

Category/Species	Min	Max	ISG-2	ISG-3	ISG-5	ISG-9	ISG-11	ISG-12	ISG-13	ISG-14	ISG-16	ISG-20	ISG-21
Bare Ground	N/A	N/A	11.00	7.00	9.00	5.00	22.00	9.00	9.00	5.00	8.00	6.00	3.00
Litter	N/A	N/A	10.00	11.00	12.00	20.00	6.00	10.00	11.00	11.00	12.00	19.00	12.00
Rock	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Vegetation	N/A	N/A	29.00	32.00	29.00	25.00	22.00	31.00	30.00	34.00	30.00	25.00	35.00
Total Ground Cover	N/A	N/A	39.00	43.00	41.00	45.00	28.00	41.00	41.00	45.00	42.00	44.00	47.00
Species Code													
Cool Season Grasses													
ACHHYM	0.00	4.00	1.00	0.00	0.00	0.00	4.00	0.00	2.00	0.00	0.00	0.00	0.00
ACHPIN	0.00	7.00	1.00	5.00	5.00	1.00	0.00	0.00	3.00	7.00	0.00	4.00	3.00
CARSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYELY	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYHIS	0.00	5.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	3.00	2.00	0.00	0.00
HESCOM	0.00	3.00	2.00	2.00	1.00	0.00	0.00	3.00	1.00	0.00	2.00	0.00	2.00
JUNBAL	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KOEMAC	0.00	2.00	1.00	0.00	1.00	0.00	1.00	2.00	0.00	0.00	2.00	0.00	0.00
NASVIR	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POACUS	0.00	6.00	4.00	2.00	3.00	2.00	0.00	2.00	2.00	5.00	4.00	1.00	0.00
POASEC	1.00	8.00	4.00	8.00	1.00	1.00	4.00	6.00	1.00	5.00	3.00	5.00	1.00
Annual Forbs													
ALYDES	0.00	2.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GAYDIF	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Perennial Forbs													
ANDOCC	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ANTSPP	0.00	2.00	0.00	0.00	0.00	1.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
CASSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00
CRYFLA	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ERECON	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EREHOO	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00	0.00
ERICAE	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
ERIUMB	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OXYNAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PEDARG	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHLHOO	0.00	3.00	0.00	1.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00
SEDLAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
SYMCAM	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
THERHO	0.00	2.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TRIHYB	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VIOVAL	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Perennial Subshrubs													
GUTSAR	0.00	2.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	2.00	0.00	1.00	1.00
HYMSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
LINPUN	0.00	2.00	0.00	1.00	1.00	1.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
Perennial Shrubs													
ARTNOV	0.00	14.00	6.00	10.00	9.00	9.00	0.00	13.00	7.00	1.00	9.00	6.00	13.00
ARTTRI	1.00	14.00	4.00	1.00	1.00	7.00	8.00	1.00	7.00	6.00	3.00	4.00	14.00
CHRVIS	0.00	5.00	4.00	0.00	2.00	2.00	1.00	2.00	0.00	4.00	3.00	1.00	1.00

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Project Name	Energy Metals Great Divide Antelope Project
Vegetation Type	Baseline
Vegetation Type	Intermittent Stream Grassland
Vegetation Parameter	Cover
Number of Plots	22

Category/Species	Min	Max	ISG-27	ISG-28	ISG-31	ISG-35	ISG-36	ISG-40	ISG-41	ISG-44	ISG-45	ISG-49	ISG-50	Mean	Standard Deviation
Bare Ground	N/A	N/A	7.00	8.00	7.00	9.00	8.00	7.00	3.00	6.00	6.00	9.00	7.00	7.77	3.74
Litter	N/A	N/A	12.00	16.00	11.00	10.00	11.00	11.00	14.00	9.00	10.00	14.00	10.00	11.91	3.15
Rock	N/A	N/A	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	1.00	0.14	0.47
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Vegetation	N/A	N/A	31.00	26.00	32.00	31.00	31.00	30.00	33.00	35.00	34.00	27.00	32.00	30.18	3.43
Total Ground Cover	N/A	N/A	43.00	42.00	43.00	41.00	42.00	43.00	47.00	44.00	44.00	41.00	43.00	42.23	3.74
Species Code															
Cool Season Grasses															
ACHHYM	0.00	4.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.45	1.10
ACHPIN	0.00	7.00	2.00	0.00	7.00	2.00	5.00	3.00	0.00	0.00	1.00	0.00	5.00	2.45	2.39
CARSPP	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
ELYELY	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.09	0.29
ELYHIS	0.00	5.00	0.00	0.00	5.00	3.00	0.00	2.00	0.00	4.00	2.00	1.00	1.00	1.14	1.49
HESCOM	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.64	0.95
JUNBAL	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.14	0.64
KOEMAC	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.73
NASVIR	0.00	3.00	0.00	0.00	0.00	1.00	0.00	0.00	3.00	0.00	1.00	0.00	0.00	0.23	0.69
POACUS	0.00	6.00	3.00	6.00	3.00	3.00	2.00	2.00	3.00	0.00	3.00	2.00	0.00	2.36	1.59
POASEC	1.00	8.00	7.00	3.00	1.00	1.00	1.00	2.00	5.00	4.00	6.00	4.00	3.00	3.45	2.18
Annual Forbs															
ALYDES	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.14	0.47
GAYDIF	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.27	0.55
Perennial Forbs															
ANDOCC	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.05	0.21
ANTSPP	0.00	2.00	1.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	1.00	0.00	0.00	0.41	0.73
CASSPP	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.27	0.46
CRYFLA	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.09	0.29
ERECON	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.05	0.21
EREHOO	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00	0.00	1.00	1.00	0.36	0.66
ERICAE	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
ERIUMB	0.00	2.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00	0.00	1.00	0.00	0.00	0.18	0.50
OXYNAN	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
PEDARG	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.05	0.21
PHLHOO	0.00	3.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.72
SEDLAN	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
SYMCAM	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
THERHO	0.00	2.00	0.00	0.00	0.00	1.00	0.00	2.00	1.00	0.00	0.00	0.00	0.00	0.23	0.53
TRIHYB	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.23	0.43
VIOVAL	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
Perennial Subshrubs															
GUTSAR	0.00	2.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	2.00	0.00	0.00	1.00	0.50	0.67
HYMSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.09	0.29
LINPUN	0.00	2.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.32	0.57
Perennial Shrubs															
ARTNOV	0.00	14.00	14.00	6.00	5.00	10.00	13.00	10.00	7.00	9.00	8.00	12.00	12.00	8.59	3.70
ARTTRI	1.00	14.00	1.00	3.00	3.00	5.00	6.00	4.00	2.00	8.00	3.00	1.00	3.00	4.32	3.17
CHRVIS	0.00	5.00	1.00	1.00	5.00	2.00	0.00	0.00	5.00	0.00	4.00	3.00	2.00	1.95	1.65

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Project Name	**Energy Metals Great Divide JAB Project**
Vegetation Type	**Baseline**
Vegetation Type	**Sagebrush Grassland**
Vegetation Parameter	**Cover**
Number of Plots	**22**

Category/Species	Min	Max	SG-2	SG-5	SG-13	SG-14	SG-15	SG-17	SG-18	SG-19	SG-20	SG-21	SG-25
Bare Ground	N/A	N/A	13.00	16.00	15.00	15.00	14.00	18.00	15.00	13.00	15.00	13.00	12.00
Litter	N/A	N/A	12.00	16.00	11.00	14.00	13.00	11.00	13.00	14.00	11.00	13.00	15.00
Rock	N/A	N/A	7.00	0.00	1.00	1.00	0.00	0.00	0.00	3.00	2.00	7.00	0.00
Lichen	N/A	N/A	1.00	3.00	1.00	0.00	2.00	0.00	2.00	3.00	1.00	0.00	0.00
Total Vegetation	N/A	N/A	17.00	15.00	22.00	20.00	21.00	21.00	20.00	17.00	21.00	17.00	23.00
Total Ground Cover	N/A	N/A	37.00	34.00	35.00	35.00	36.00	32.00	35.00	37.00	35.00	37.00	38.00
Species Code													
Cool Season Grasses													
ACHHYM	0.00	3.00	0.00	2.00	0.00	2.00	1.00	2.00	3.00	1.00	1.00	0.00	2.00
ELYELY	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00
ELYHIS	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	1.00	0.00	0.00
ELYSPI	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
HESCOM	0.00	6.00	0.00	0.00	3.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	1.00
KOEMAC	0.00	4.00	0.00	0.00	1.00	0.00	2.00	0.00	0.00	4.00	0.00	0.00	0.00
NASVIR	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
POASEC	0.00	10.00	6.00	6.00	1.00	1.00	5.00	10.00	0.00	2.00	4.00	2.00	4.00
Annual Forbs													
GAYDIF	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Forbs													
ANTMIC	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
EREHOO	0.00	3.00	0.00	1.00	2.00	0.00	1.00	1.00	2.00	0.00	1.00	1.00	0.00
ERIFLA	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
PHLHOO	0.00	5.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
PHLMUS	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STEACA	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Subshrubs													
ARTFRI	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
ARTPED	0.00	7.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00	0.00	0.00	0.00
ATRGAR	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HYMRIC	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KRALAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
LINPUN	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Perennial Shrubs													
ARTNOV	0.00	11.00	7.00	2.00	6.00	9.00	2.00	0.00	4.00	0.00	11.00	6.00	7.00
ARTTRI	0.00	14.00	0.00	3.00	3.00	8.00	8.00	6.00	7.00	1.00	1.00	1.00	4.00
CHRVIS	0.00	3.00	0.00	0.00	3.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	2.00
Perenial Succulent													
OPUPOL	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Project Name	Energy Metals Great Divide JAB Project
Vegetation Type	Baseline
Vegetation Type	Sagebrush Grassland
Vegetation Parameter	Cover
Number of Plots	22

Category/Species	Min	Max	SG-26	SG-27	SG-28	SG-30	SG-39	SG-41	SG-42	SG-43	SG-48	SG-49	SG-50	Mean	Standard Deviation
Bare Ground	N/A	N/A	17.00	17.00	16.00	13.00	12.00	11.00	16.00	10.00	11.00	11.00	12.00	13.86	2.27
Litter	N/A	N/A	6.00	12.00	14.00	11.00	11.00	17.00	14.00	16.00	9.00	12.00	18.00	12.86	2.71
Rock	N/A	N/A	10.00	1.00	5.00	2.00	1.00	2.00	0.00	1.00	12.00	5.00	3.00	2.86	3.43
Lichen	N/A	N/A	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	2.00	0.00	0.86	0.99
Total Vegetation	N/A	N/A	17.00	20.00	14.00	24.00	25.00	20.00	19.00	22.00	18.00	20.00	17.00	19.55	2.82
Total Ground Cover	N/A	N/A	33.00	33.00	34.00	37.00	38.00	39.00	34.00	40.00	39.00	37.00	39.00	36.09	2.24
Species Code															
Cool Season Grasses															
ACHHYM	0.00	3.00	0.00	1.00	3.00	3.00	0.00	2.00	1.00	0.00	2.00	0.00	2.00	1.27	1.08
ELYELY	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.27	0.46
ELYHIS	0.00	2.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.63
ELYSPI	0.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.32	0.65
HESCOM	0.00	6.00	0.00	0.00	1.00	1.00	0.00	3.00	0.00	6.00	0.00	2.00	1.00	1.00	1.48
KOEMAC	0.00	4.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.50	1.06
NASVIR	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.43
POASEC	0.00	10.00	3.00	4.00	1.00	4.00	1.00	2.00	3.00	2.00	2.00	5.00	3.00	3.23	2.27
Annual Forbs															
GAYDIF	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.05	0.21
Perennial Forbs															
ANTMIC	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.35
EREHOO	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	3.00	0.59	0.85
ERIFLA	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.14	0.35
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
PHLHOO	0.00	5.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	1.00	0.00	0.00	0.36	1.09
PHLMUS	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.14	0.64
STEACA	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
Perennial Subshrubs															
ARTFRI	0.00	3.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	2.00	0.00	0.32	0.78
ARTPED	0.00	7.00	7.00	0.00	4.00	4.00	1.00	0.00	0.00	0.00	7.00	1.00	0.00	1.27	2.21
ATRGAR	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.05	0.21
HYMRIC	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.05	0.21
KRALAN	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
LINPUN	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.18	0.50
Perennial Shrubs															
ARTNOV	0.00	11.00	0.00	10.00	3.00	4.00	0.00	6.00	4.00	6.00	0.00	2.00	4.00	4.23	3.35
ARTTRI	0.00	14.00	6.00	4.00	0.00	5.00	14.00	3.00	7.00	2.00	0.00	6.00	4.00	4.23	3.41
CHRVIS	0.00	3.00	0.00	0.00	0.00	0.00	3.00	1.00	0.00	1.00	0.00	0.00	0.00	0.59	0.96
Perenial Succulent															
OPUPOL	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.09	0.29

Project Name	**Energy Metals Great Divide JAB Project**
Vegetation Type	**Baseline**
Vegetation Type	**Mixed Grass/Mat-Cushion Grassland**
Vegetation Parameter	**Cover**
Number of Plots	**22**

Category/Species	Min	Max	M-1	M-3	M-5	M-7	M-11	M-12	M-16	M-20	M-23	M-24	M-27
Bare Ground	N/A	N/A	21.00	15.00	22.00	7.00	15.00	16.00	14.00	8.00	14.00	15.00	11.00
Litter	N/A	N/A	10.00	12.00	9.00	18.00	10.00	16.00	10.00	18.00	15.00	14.00	3.00
Rock	N/A	N/A	2.00	2.00	0.00	5.00	7.00	4.00	0.00	5.00	6.00	3.00	17.00
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Total Vegetation	N/A	N/A	17.00	21.00	19.00	20.00	18.00	14.00	26.00	19.00	15.00	17.00	19.00
Total Ground Cover	N/A	N/A	29.00	35.00	28.00	43.00	35.00	34.00	36.00	42.00	36.00	35.00	39.00
Species Code													
Cool Season Grasses													
ACHHYM	0.00	8.00	0.00	4.00	2.00	2.00	2.00	2.00	5.00	0.00	5.00	2.00	0.00
ELYELY	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
ELYHIS	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYSPI	0.00	8.00	2.00	1.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00	0.00	2.00
HESCOM	0.00	5.00	0.00	1.00	0.00	2.00	5.00	2.00	0.00	0.00	0.00	0.00	0.00
KOEMAC	0.00	5.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	2.00	0.00	0.00
POASEC	0.00	8.00	2.00	5.00	1.00	5.00	1.00	2.00	4.00	8.00	2.00	4.00	2.00
Annual Forbs													
GAYDIF	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Forbs													
ANTMIC	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
ASTSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EREHOO	0.00	5.00	5.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	2.00
ERIFLA	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
ERIUMB	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HAPSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHLHOO	0.00	2.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	2.00
PHLMUS	0.00	14.00	4.00	0.00	14.00	2.00	4.00	0.00	0.00	0.00	2.00	1.00	6.00
STEACA	0.00	4.00	3.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00	0.00	0.00	4.00
Perennial Subshrubs													
ARTFRI	0.00	3.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
ARTPED	0.00	7.00	0.00	5.00	1.00	7.00	1.00	1.00	0.00	4.00	1.00	6.00	0.00
ATRGAR	0.00	2.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
KRALAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
LINPUN	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Shrubs													
ARTNOV	0.00	11.00	0.00	0.00	0.00	0.00	0.00	4.00	3.00	2.00	0.00	1.00	0.00
ARTTRI	0.00	10.00	0.00	3.00	0.00	1.00	0.00	0.00	10.00	0.00	0.00	1.00	0.00
CHRVIS	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Perenial Succulent													
OPUPOL	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00

Project Name	Energy Metals Great Divide JAB Project
Vegetation Type	Baseline
Vegetation Type	Mixed Grass/Mat-Cushion Grassland
Vegetation Parameter	Cover
Number of Plots	22

Category/Species	Min	Max	M-28	M-30	M-31	M-32	M-33	M-36	M-38	M-39	M-42	M-43	M-50	Mean	Standard Deviation
Bare Ground	N/A	N/A	14.00	16.00	12.00	8.00	15.00	15.00	18.00	16.00	12.00	10.00	14.00	14.00	3.78
Litter	N/A	N/A	5.00	14.00	12.00	5.00	13.00	11.00	13.00	9.00	15.00	19.00	19.00	12.27	4.48
Rock	N/A	N/A	4.00	4.00	3.00	16.00	2.00	5.00	6.00	3.00	7.00	4.00	1.00	4.82	4.27
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
Total Vegetation	N/A	N/A	27.00	16.00	23.00	21.00	20.00	19.00	13.00	22.00	16.00	17.00	16.00	18.86	3.55
Total Ground Cover	N/A	N/A	36.00	34.00	38.00	42.00	32.00	35.00	32.00	34.00	38.00	40.00	36.00	35.86	3.87
Species Code															
Cool Season Grasses															
ACHHYM	0.00	8.00	1.00	1.00	0.00	0.00	1.00	8.00	1.00	3.00	1.00	4.00	7.00	2.32	2.30
ELYELY	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29
ELYHIS	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.18	0.39
ELYSPI	0.00	8.00	2.00	3.00	3.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18	1.92
HESCOM	0.00	5.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	2.00	0.00	0.68	1.21
KOEMAC	0.00	5.00	0.00	1.00	5.00	1.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.59	1.26
POASEC	0.00	8.00	2.00	2.00	7.00	1.00	5.00	0.00	2.00	1.00	7.00	1.00	4.00	3.09	2.27
Annual Forbs															
GAYDIF	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.05	0.21
Perennial Forbs															
ANTMIC	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.35
ASTSPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
EREHOO	0.00	5.00	3.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.95	1.17
ERIFLA	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
ERISPP	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.35
ERIUMB	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
HAPSPP	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
PHLHOO	0.00	2.00	0.00	0.00	1.00	0.00	0.00	2.00	1.00	0.00	0.00	0.00	0.00	0.32	0.65
PHLMUS	0.00	14.00	4.00	3.00	1.00	4.00	0.00	1.00	5.00	0.00	0.00	0.00	0.00	2.32	3.26
STEACA	0.00	4.00	3.00	1.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	1.31
Perennial Subshrubs															
ARTFRI	0.00	3.00	0.00	0.00	3.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.77
ARTPED	0.00	7.00	1.00	2.00	0.00	0.00	0.00	1.00	2.00	0.00	2.00	3.00	3.00	1.82	2.06
ATRGAR	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.14	0.47
KRALAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.18	0.39
LINPUN	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.14	0.64
Perennial Shrubs															
ARTNOV	0.00	11.00	4.00	0.00	1.00	1.00	11.00	1.00	0.00	8.00	2.00	0.00	0.00	1.73	2.86
ARTTRI	0.00	10.00	2.00	0.00	0.00	1.00	1.00	1.00	0.00	7.00	0.00	0.00	0.00	1.23	2.52
CHRVIS	0.00	2.00	2.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	2.00	0.00	0.27	0.63
Perenial Succulent															
OPUPOL	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29

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Project Name	Energy Metals Great Divide JAB Project
Vegetation Type	Baseline
Vegetation Type	Big Sagebrush Shrubland
Vegetation Parameter	Cover
Number of Plots	22

Category/Species	Min	Max	BSS-1	BSS-3	BSS-4	BSS-5	BSS-11	BSS-13	BSS-19	BSS-20	BSS-21	BSS-26	BSS-27
Bare Ground	N/A	N/A	16.00	13.00	8.00	15.00	16.00	11.00	19.00	17.00	12.00	14.00	15.00
Litter	N/A	N/A	8.00	13.00	12.00	14.00	13.00	13.00	11.00	14.00	10.00	10.00	14.00
Rock	N/A	N/A	7.00	4.00	13.00	0.00	3.00	0.00	0.00	0.00	3.00	9.00	2.00
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
Total Vegetation	N/A	N/A	19.00	20.00	17.00	21.00	18.00	26.00	20.00	19.00	23.00	17.00	19.00
Total Ground Cover	N/A	N/A	34.00	37.00	42.00	35.00	34.00	39.00	31.00	33.00	38.00	36.00	35.00
Species Code													
Cool Season Grasses													
ACHHYM	0.00	3.00	0.00	0.00	2.00	3.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00
ACHPIN	0.00	3.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
ELYELY	0.00	3.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYHIS	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELYSPI	0.00	3.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POACUS	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POASEC	0.00	9.00	6.00	5.00	3.00	3.00	0.00	4.00	6.00	4.00	9.00	3.00	4.00
Annual Forbs													
GAYDIF	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Forbs													
EREHOO	0.00	7.00	0.00	0.00	4.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	4.00
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHLHOO	0.00	2.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perennial Subshrubs													
ARTPED	0.00	3.00	0.00	0.00	1.00	3.00	2.00	0.00	0.00	0.00	3.00	1.00	0.00
ATRGAR	0.00	3.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
KRALAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Perennial Shrubs													
ARTNOV	0.00	16.00	0.00	4.00	6.00	6.00	0.00	5.00	0.00	2.00	3.00	10.00	2.00
ARTTRI	0.00	14.00	11.00	7.00	0.00	3.00	10.00	11.00	8.00	11.00	4.00	0.00	6.00
CHRVIS	0.00	12.00	1.00	3.00	0.00	2.00	2.00	3.00	0.00	0.00	2.00	0.00	2.00
SARVER	0.00	8.00	0.00	1.00	0.00	0.00	0.00	1.00	6.00	2.00	0.00	0.00	0.00

Project Name	Energy Metals Great Divide JAB Project
Vegetation Type	Baseline
Vegetation Type	Big Sagebrush Shrubland
Vegetation Parameter	Cover
Number of Plots	22

Category/Species	Min	Max	BSS-29	BSS-30	BSS-31	BSS-33	BSS-34	BSS-35	BSS-37	BSS-46	BSS-48	BSS-49	BSS-50	Mean	Standard Deviation
Bare Ground	N/A	N/A	14.00	14.00	11.00	14.00	19.00	8.00	17.00	15.00	10.00	7.00	12.00	13.50	3.36
Litter	N/A	N/A	15.00	12.00	16.00	14.00	11.00	11.00	14.00	7.00	11.00	14.00	13.00	12.27	2.23
Rock	N/A	N/A	0.00	0.00	0.00	2.00	2.00	0.00	0.00	8.00	10.00	0.00	4.00	3.05	3.91
Lichen	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.14	0.47
Total Vegetation	N/A	N/A	21.00	24.00	23.00	20.00	18.00	31.00	19.00	20.00	19.00	29.00	20.00	21.05	3.66
Total Ground Cover	N/A	N/A	36.00	36.00	39.00	36.00	31.00	42.00	33.00	35.00	40.00	43.00	38.00	36.50	3.36
Species Code															
Cool Season Grasses															
ACHHYM	0.00	3.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.73	1.08
ACHPIN	0.00	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.27	0.77
ELYELY	0.00	3.00	0.00	0.00	0.00	0.00	0.00	3.00	1.00	1.00	0.00	0.00	2.00	0.36	0.79
ELYHIS	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
ELYSPI	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.18	0.66
POACUS	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
POASEC	0.00	9.00	1.00	2.00	8.00	4.00	4.00	1.00	5.00	5.00	4.00	1.00	3.00	3.86	2.21
Annual Forbs															
GAYDIF	0.00	3.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	1.00	0.00	0.18	0.66
Perennial Forbs															
EREHOO	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	7.00	0.00	0.00	0.86	1.81
ERISPP	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.05	0.21
PHLHOO	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	1.00	0.18	0.50
Perennial Subshrubs															
ARTPED	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.96
ATRGAR	0.00	3.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.75
KRALAN	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21
Perennial Shrubs															
ARTNOV	0.00	16.00	3.00	5.00	7.00	11.00	7.00	16.00	3.00	1.00	0.00	0.00	9.00	4.55	4.23
ARTTRI	0.00	14.00	12.00	14.00	4.00	1.00	5.00	7.00	2.00	8.00	5.00	12.00	3.00	6.55	4.21
CHRVIS	0.00	12.00	2.00	0.00	0.00	1.00	2.00	0.00	0.00	1.00	0.00	12.00	0.00	1.50	2.58
SARVER	0.00	8.00	3.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.95	2.13

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Project Name	Energy Metals Great Divide Antelope Project
Vegetation Type	Baseline
Area Name	Sagebrush Grassland
Vegetation Parameter	Density
Number of Plots	23

Category/Species	Min	Max	S2	S5	S10	S11	S16	S18	S19	S21	S23	S24	S25	S26	S26B	S27	S28	S32	S34	S35	S37	S42	S47	S48	S49	Mean	Standard Deviation	N_{min}
Total Density	N/A	N/A	146.00	138.00	109.00	136.00	145.00	154.00	175.00	147.00	139.00	145.00	216.00	152.00	122.00	102.00	136.00	143.00	133.00	125.00	129.00	177.00	148.00	95.00	79.00	138.74	28.44	13.76
Half & Sub-Shrubs																												
ARTFRI	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.39	1.50	
ARTPED	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52	2.50	
KRALAN	0.00	13.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.00	0.00	0.00	0.00	13.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	3.47	
LINPUN	0.00	20.00	9.00	14.00	0.00	0.00	0.00	16.00	0.00	0.00	16.00	0.00	0.00	5.00	0.00	15.00	1.00	11.00	0.00	20.00	0.00	7.00	17.00	19.00	0.00	6.52	7.63	
Full Shrubs																												
ARTNOV	22.00	176.00	22.00	57.00	76.00	55.00	133.00	120.00	150.00	123.00	95.00	131.00	176.00	75.00	46.00	63.00	66.00	113.00	121.00	63.00	94.00	90.00	100.00	50.00	68.00	90.74	37.87	
ARTTRI	0.00	66.00	66.00	30.00	33.00	55.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.00	64.00	0.00	66.00	1.00	0.00	30.00	0.00	40.00	17.00	12.00	0.00	18.96	24.29	
CHRVIS	0.00	49.00	49.00	37.00	0.00	26.00	12.00	18.00	25.00	24.00	28.00	14.00	40.00	27.00	12.00	17.00	3.00	5.00	12.00	10.00	35.00	40.00	14.00	14.00	11.00	20.57	13.05	

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Project Name Energy Metals Great Divide Antelope Project
Vegetation Type Baseline
Area Name Breaks Grassland
Vegetation Parameter Density
Number of Plots 22

Category/Species	Min	Max	BG1	BG2	BG3	BG4	BG5	BG11	BG12	BG19	BG26	BG27	BG28	BG30	BG34	BG35	BG35B	BG36	BG37	BG43	BG44	BG45	BG47	BG50	Mean	Standard Deviation	N_{min}
Total Density	NA	NA	122.00	147.00	108.00	158.00	96.00	86.00	143.00	126.00	174.00	153.00	144.00	154.00	132.00	121.00	91.00	149.00	109.00	131.00	106.00	99.00	154.00	134.00	128.95	24.54	11.87
Half & Sub-Shrubs																											
ARTFRI	0.00	25.00	0.00	0.00	3.00	0.00	3.00	0.00	3.00	0.00	0.00	4.00	0.00	16.00	0.00	0.00	4.00	0.00	0.00	0.00	25.00	0.00	5.00	0.00	2.86	6.11	
ARTPED	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.18	0.85	
GUTSAR	0.00	10.00	0.00	10.00	0.00	5.00	0.00	0.00	0.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	10.00	1.73	3.28	
KRALAN	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	1.22	
LINPUN	0.00	27.00	0.00	27.00	0.00	3.00	2.00	6.00	4.00	5.00	19.00	11.00	2.00	3.00	5.00	1.00	2.00	0.00	3.00	0.00	5.00	1.00	0.00	4.00	4.73	6.60	
Full Shrubs																											
ARTNOV	0.00	100.00	51.00	22.00	40.00	80.00	0.00	30.00	59.00	78.00	70.00	65.00	65.00	60.00	40.00	60.00	60.00	70.00	9.00	27.00	20.00	33.00	100.00	50.00	49.50	24.97	
ARTTRI	23.00	90.00	70.00	78.00	65.00	70.00	90.00	50.00	50.00	40.00	80.00	70.00	70.00	75.00	80.00	48.00	23.00	70.00	90.00	80.00	56.00	50.00	45.00	60.00	64.09	17.13	
CHRVIS	0.00	27.00	1.00	10.00	0.00	0.00	1.00	0.00	27.00	0.00	2.00	3.00	7.00	0.00	1.00	9.00	2.00	2.00	7.00	24.00	0.00	15.00	0.00	10.00	5.50	7.77	

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Project Name	Energy Metals Great Divide Antelope Project
Vegetation Type	Baseline
Area Name	Mix-Grass/Mat-cushion Grassland
Vegetation Parameter	Density
Number of Plots	22

Category/Species	Min	Max	M1	M3	M4	M5	M9	M11	M14	M15	M16	M18	M19	M23	M24	M26	M31	M32	M34	M35	M37	M40	M44	M46	Mean	Standard Deviation	N_{min}
Total Density	N/A	N/A	138.00	49.00	142.00	130.00	141.00	111.00	238.00	148.00	124.00	137.00	108.00	107.00	79.00	171.00	51.00	32.00	112.00	62.00	97.00	248.00	93.00	148.00	121.18	53.63	64.19
Half & Sub-Shrubs																											
ARTFRI	0.00	15.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	15.00	8.00	0.00	0.00	0.00	13.00	2.00	3.00	8.00	2.00	0.00	6.00	0.00	3.23	4.60	
ARTPED	0.00	56.00	0.00	34.00	0.00	0.00	25.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	17.00	0.00	0.00	0.00	0.00	0.00	0.00	56.00	0.00	6.68	14.55	
GUTSAR	0.00	10.00	3.00	0.00	0.00	10.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00	0.00	0.00	0.00	1.05	2.46	
KRALAN	0.00	13.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	3.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	13.00	0.00	0.00	1.00	1.41	3.67	
LINPUN	0.00	30.00	0.00	0.00	0.00	0.00	5.00	30.00	0.00	19.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	2.95	7.44	
Full Shrubs																											
ARTNOV	0.00	154.00	23.00	3.00	110.00	60.00	42.00	33.00	0.00	78.00	22.00	118.00	64.00	43.00	12.00	154.00	2.00	3.00	64.00	11.00	20.00	0.00	8.00	135.00	45.68	47.00	
ARTTRI	0.00	235.00	112.00	5.00	20.00	50.00	65.00	40.00	223.00	46.00	77.00	0.00	33.00	43.00	58.00	0.00	36.00	27.00	13.00	43.00	54.00	235.00	23.00	0.00	54.68	62.60	
CHRVIS	0.00	23.00	0.00	0.00	12.00	10.00	2.00	8.00	15.00	4.00	0.00	4.00	2.00	2.00	8.00	0.00	0.00	0.00	23.00	0.00	6.00	13.00	0.00	12.00	5.50	6.38	

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Project Name	Energy Metals Great Divide Antelope Project
Vegetation Type	Baseline
Area Name	Big Sagebrush Shrubland
Vegetation Parameter	Density
Number of Plots	22

Category/Species	Min	Max	B1	B9	B11	B13	B17	B19	B20	B21	B27	B28	B29	B30	B31	B34	B35	B36	B39	B41	B42	B44	B47	B50	Mean	Standard Deviation	N_{min}
Total Density	N/A	N/A	135.00	114.00	108.00	151.00	110.00	129.00	272.00	108.00	173.00	158.00	183.00	93.00	142.00	155.00	99.00	106.00	161.00	138.00	188.00	164.00	120.00	124.00	142.32	40.07	25.97
Half & Sub-Shrubs																											
ARTFRI	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.45	2.13	
GUTSAR	0.00	10.00	0.00	10.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	2.00	3.00	0.00	0.00	0.00	0.00	1.05	2.57	
KRALAN	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	4.00	0.27	0.88	
LINPUN	0.00	44.00	15.00	6.00	7.00	1.00	0.00	9.00	0.00	15.00	12.00	0.00	1.00	0.00	1.00	8.00	1.00	0.00	9.00	0.00	44.00	18.00	4.00	0.00	6.86	10.12	
Full Shrubs																											
ARTNOV	23.00	130.00	85.00	83.00	86.00	100.00	43.00	85.00	121.00	24.00	103.00	120.00	100.00	83.00	27.00	85.00	56.00	51.00	130.00	33.00	97.00	70.00	23.00	60.00	75.68	32.22	
ARTTRI	0.00	110.00	10.00	0.00	0.00	30.00	20.00	9.00	0.00	45.00	25.00	33.00	31.00	0.00	110.00	23.00	34.00	20.00	0.00	75.00	0.00	28.00	70.00	38.00	27.32	28.20	
CHRVIS	1.00	150.00	25.00	15.00	15.00	20.00	46.00	26.00	150.00	24.00	33.00	5.00	51.00	10.00	4.00	39.00	1.00	35.00	20.00	27.00	47.00	47.00	23.00	12.00	30.68	30.42	

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Project Name Energy Metals Great Divide Antelope Project
Vegetation Type Baseline
Area Name Intermittent Stream Grassland
Vegetation Parameter Density
Number of Plots 22

Category/Species	Min	Max	I2	I3	I5	I9	I11	I12	I13	I14	I16	I20	I21	I27	I28	I31	I35	I36	I40	I41	I44	I45	I49	I50	Mean	Standard Deviation	N_{min}
Total Density	N/A	N/A	149.00	106.00	119.00	100.00	265.00	62.00	0.00	152.00	131.00	110.00	91.00	86.00	88.00	117.00	106.00	72.00	107.00	85.00	96.00	87.00	113.00	106.00	106.73	47.62	63.60
Half & Sub-Shrubs																											
GUTSAR	0.00	13.00	0.00	9.00	6.00	7.00	0.00	0.00	0.00	13.00	4.00	2.00	4.00	0.00	6.00	0.00	5.00	9.00	0.00	7.00	0.00	1.00	0.00	0.00	3.32	3.91	
KRALAN	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	1.49	
LINPUN	0.00	18.00	18.00	5.00	5.00	3.00	0.00	2.00	0.00	0.00	12.00	0.00	2.00	4.00	3.00	0.00	9.00	0.00	5.00	11.00	14.00	1.00	8.00	14.00	5.27	5.49	
Full Shrubs																											
ARTNOV	0.00	65.00	48.00	57.00	54.00	38.00	0.00	32.00	0.00	13.00	65.00	21.00	24.00	60.00	20.00	12.00	45.00	32.00	22.00	28.00	37.00	56.00	58.00	53.00	35.23	19.74	
ARTTRI	0.00	166.00	60.00	16.00	20.00	16.00	166.00	12.00	0.00	72.00	32.00	67.00	46.00	6.00	45.00	48.00	36.00	27.00	56.00	23.00	39.00	13.00	22.00	26.00	38.55	34.67	
CHRVIS	0.00	99.00	23.00	19.00	34.00	36.00	99.00	16.00	0.00	54.00	18.00	20.00	8.00	16.00	14.00	57.00	11.00	4.00	24.00	16.00	6.00	16.00	25.00	13.00	24.05	21.97	

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Project Name	Energy Metals Great Divide JAB Project
Vegetation Type	Baseline
Area Name	Sagebrush Grassland
Vegetation Parameter	Density
Number of Plots	22

Category/Species	Min	Max	S2	S5	S13	S14	S15	S17	S18	S19	S20	S21	S25	S26	S27	S28	S30	S39	S41	S42	S43	S48	S49	S50	Mean	Standard Deviation	N_{min}
Total Density	N/A	N/A	77.00	133.00	161.00	98.00	139.00	0.00	156.00	102.00	164.00	144.00	157.00	2.00	130.00	304.00	189.00	33.00	220.00	177.00	143.00	606.00	202.00	144.00	158.23	121.46	193.07
Half & Sub-Shrubs																											
ARTFRI	0.00	83.00	6.00	2.00	0.00	0.00	30.00	0.00	2.00	83.00	0.00	3.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	2.00	4.00	13.00	0.00	6.73	18.32	
ARTPED	0.00	600.00	8.00	0.00	0.00	0.00	0.00	0.00	10.00	1.00	0.00	0.00	0.00	1.00	0.00	213.00	65.00	30.00	75.00	0.00	0.00	600.00	43.00	0.00	47.55	132.45	
ATRGAR	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.27	0.94	
KRALAN	0.00	14.00	13.00	1.00	0.00	0.00	4.00	0.00	3.00	2.00	0.00	1.00	0.00	0.00	0.00	8.00	14.00	2.00	0.00	0.00	0.00	0.00	3.00	0.00	2.32	4.11	
LINPUN	0.00	6.00	0.00	0.00	2.00	0.00	0.00	0.00	1.00	0.00	0.00	6.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	4.00	0.00	0.00	0.00	0.95	1.84	
Full Shrubs																											
ARTNOV	0.00	100.00	50.00	50.00	76.00	70.00	100.00	0.00	43.00	0.00	100.00	32.00	50.00	0.00	100.00	80.00	50.00	0.00	100.00	58.00	75.00	2.00	52.00	100.00	54.00	36.18	
ARTTRI	0.00	97.00	0.00	60.00	43.00	28.00	0.00	0.00	87.00	8.00	50.00	76.00	97.00	1.00	30.00	0.00	60.00	1.00	40.00	93.00	13.00	0.00	78.00	40.00	36.59	34.30	
CHRVIS	0.00	49.00	0.00	20.00	40.00	0.00	5.00	0.00	10.00	8.00	14.00	26.00	3.00	0.00	0.00	0.00	0.00	0.00	5.00	23.00	49.00	0.00	13.00	0.00	9.82	13.93	

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Project Name	Energy Metals Great Divide JAB Project
Vegetation Type	Baseline
Area Name	Mix-Grass/Mat-cushion Grassland
Vegetation Parameter	Density
Number of Plots	22

Category/Species	Min	Max	M1	M3	M5	M7	M11	M12	M16	M20	M23	M24	M27	M28	M30	M31	M32	M33	M35	M38	M39	M42	M43	M50	Mean	Standard Deviation	N_{min}
Total Density	N/A	N/A	18.00	192.00	133.00	116.00	131.00	105.00	271.00	84.00	93.00	312.00	20.00	156.00	57.00	165.00	105.00	194.00	156.00	98.00	206.00	155.00	128.00	186.00	140.05	69.67	81.09
Half & Sub-Shrubs																											
ARTFRI	0.00	40.00	1.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	12.00	7.00	8.00	17.00	27.00	0.00	0.00	0.00	0.00	0.00	12.00	0.00	5.64	10.27	
ARTPED	0.00	250.00	3.00	90.00	120.00	85.00	50.00	30.00	77.00	43.00	69.00	250.00	8.00	72.00	37.00	100.00	52.00	0.00	50.00	57.00	0.00	62.00	87.00	137.00	67.23	53.93	
ATRGAR	0.00	31.00	0.00	0.00	13.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.00	0.00	0.00	0.00	0.00	5.00	2.23	6.89	
GUTSAR	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.36	1.67	
KRALAN	0.00	44.00	0.00	3.00	0.00	18.00	1.00	14.00	0.00	7.00	21.00	9.00	0.00	0.00	0.00	11.00	1.00	1.00	2.00	30.00	0.00	41.00	17.00	44.00	10.00	13.20	
LINPUN	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.68	2.16	
Full Shrubs																											
ARTNOV	0.00	150.00	2.00	58.00	0.00	4.00	0.00	61.00	90.00	34.00	3.00	28.00	0.00	44.00	4.00	7.00	15.00	120.00	0.00	3.00	150.00	22.00	0.00	0.00	29.32	41.49	
ARTTRI	0.00	56.00	0.00	10.00	0.00	0.00	0.00	0.00	56.00	0.00	0.00	7.00	0.00	2.00	8.00	20.00	10.00	23.00	30.00	0.00	19.00	2.00	0.00	0.00	8.50	13.58	
ATRCAN	0.00	12.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	1.05	3.17	
CHRNAU	0.00	5.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	1.04	
CHRVIS	0.00	50.00	0.00	31.00	0.00	4.00	40.00	0.00	48.00	0.00	0.00	18.00	0.00	23.00	0.00	9.00	0.00	50.00	33.00	0.00	30.00	28.00	12.00	0.00	14.82	17.06	

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Project Name	Energy Metals Great Divide JAB Project
Vegetation Type	Baseline
Area Name	Big Sagebrush Shrubland
Vegetation Parameter	Density
Number of Plots	22

Category/Species	Min	Max	B1	B3	B4	B5	B11	B13	B19	B20	B21	B26	B27	B29	B30	B31	B33	B34	B35	B37	B46	B48	B49	B50	Mean	Standard Deviation	N_{min}
Total Density	N/A	N/A	0.00	0.00	171.00	211.00	190.00	0.00	0.00	2.00	301.00	180.00	244.00	0.00	0.00	122.00	176.00	255.00	163.00	0.00	0.00	209.00	117.00	166.00	113.95	104.45	275.29
Half & Sub-Shrubs																											
ATRGAR	0.00	51.00	0.00	0.00	0.00	0.00	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	4.05	12.99	
ARTFRI	0.00	7.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.73	2.07	
ARTPED	0.00	170.00	0.00	0.00	85.00	90.00	74.00	0.00	0.00	0.00	170.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	110.00	0.00	0.00	24.05	48.34	
KRALAN	0.00	21.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	21.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	3.00	0.00	0.00	1.68	4.65	
Full Shrubs																											
ARTNOV	0.00	150.00	0.00	0.00	66.00	36.00	15.00	0.00	0.00	0.00	50.00	100.00	100.00	0.00	0.00	35.00	27.00	100.00	100.00	0.00	0.00	29.00	0.00	150.00	36.73	45.77	
ARTTRI	0.00	97.00	0.00	0.00	6.00	50.00	35.00	0.00	0.00	1.00	20.00	60.00	60.00	0.00	0.00	87.00	97.00	63.00	56.00	0.00	0.00	60.00	0.00	14.00	27.68	32.65	
CHRVIS	0.00	92.00	0.00	0.00	4.00	35.00	30.00	0.00	0.00	0.00	40.00	15.00	84.00	0.00	0.00	0.00	1.00	92.00	0.00	0.00	0.00	0.00	0.00	0.00	13.68	27.05	
SARVER	0.00	117.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	117.00	0.00	5.36	24.94	

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ADDENDUM 3.5-G

ANTELOPE AND JAB WETLANDS SURVEY MAPS

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE,

THAT CAN BE VIEWED AT THE RECORD TITLED: DRAWING NO. FIGURE 3.5-2A, "ANTELOPE PERMIT AREA 2007 WETLAND DELINEATION"

WITHIN THIS PACKAGE... OR BY SEARCHING USING THE DOCUMENT/REPORT NO. FIGURE 3.5-2A

D-03

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE,

THAT CAN BE VIEWED AT THE RECORD TITLED: DRAWING NO. FIGURE 3.5-2B, "JAB PERMIT AREA 2007 WETLAND DELINEATION"

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D-04

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ADDENDUM 3.5-H

ANTELOPE AND JAB WETLANDS SPECIES LIST

Wetlands Species List

SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS
ACHNATHERUM HYMENDOIDES	INDIAN RICEGRASS	UPL
ALLIUM TEXTILE	TEXTILE ONION	UPL
ALYSSUM DESERTORUM	DESERT ALYSSUM	UPL
ANTENNARIA MICROPHYLLA	LITTLELEAF PUSSYTOES	UPL
ARGENTINA ANSERINE	SILVERWEED CINQUEFOIL	OBL
ARTEMISIA CANA	SILVER SAGEBRUSH	FACU
ARTEMISIA TRIDENTATA	BIG SAGEBRUSH	UPL OR NL
ARTEMISIA TRIDENTATA NUTT. SSP. WYOMINGENSIS	WYOMING BIG SAGEBRUSH	UPL OR NL
CASTILLEJA	INDIAN PAINTBRUSH	FAC
CAREX PRAEGRACILIS	FIELDCLUSTERED SEDGE	FACW
CIRSIUM SPECIES	THISTLE	NL
CHRYSOTHAMNUS SPECIES	RABBITBRUSH	UPL OR NL
CHRYSOTHAMNUS VISCIDFLORUS	DOUGLAS RABBITBRUSH	UPL OR NL
CRYPTANTHA SPECIES	CRYPTANTHA	NL
CRYPTANTHA FENDLERI	SANDDUNE CRYPTANTHA	NL
DANTHONIA UNISPICATA	ONESPIKE DANTHONIA	NL
DESCURAINIA SPECIES	TANSYMUSTARD	NI
DESCURAINIA SOPHIA	FLIXWEED TANSY MUSTARD	UPL
DISTICHLIS SPICATA	INLAND SALTGRASS	FAC+

SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS
ELYMUS ELYMOIDES	BOTTLEBRUSH SQUIRRELTAIL	FACU-
ELYMUS SMITHII	WESTERN WHEATGRASS	UPL
ERICAMERIA NAUSEOSA	RUBBER RABBITBRUSH	UPL
ERIOGONUM UMBELLATUM	SULPHUR-FLOWER BUCKWHEAT	NL
EREMOGONE HOOKERI	HOOKER'S SANDWORT	UPL
GAYOPHYTUM SPECIES	GROUNDSMOKE	NI
GAYOPHYTUM DIFFUSUM	GROUNDSMOKE	NI
GILIA TWEEDYI	TWEEDY'S GILA	NI
HESPEROSTIPA COMATA	NEEDLE AND THREAD	NL
HORDEUM JUBATUM	FOXTAIL BARLEY	FAC-
JUNCUS BALTICUS	BALTIC RUSH	FACW+
JUNCUS SPECIES	RUSH	FACW
KOELERIA MACRANTHA	PRAIRIE JUNEGRASS	UPL
LINANTHUS PUNGENS	GRANITE PRICKLY PHLOX	UPL
LUPINUS SERICEUS	SILKY LUPINE	UPL
MONOLEPIS NUTTALLIANA	NUTTALL'S POVERTYWEED	FAC-
NASSELLA VIRIDULA	GREEN NEEDLEGRASS	UPL
PHLOX SPECIES	PHLOX	UPL
PHLOX HOODII	HOODS PHLOX	UPL
POA CUSICKII	CUSICK'S BLUEGRASS	NL
POA PRATENSIS	KENTUCKY BLUEGRASS	FACU

SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS
POA SECUNDA	SANDBERG BLUEGRASS	FACU
POLYGONUM AVICULARE	PROSTRAT KNOTWEED	FACU
POTENTILLA CONCINNA	ELEGANT CINQUEFOIL	UPL OR NI
SALSOLA TRAGUS	RUSSIAN THISTLE	FACU
STREPTANTHELLA LONGIROSTRIS	LONGBEAK STREPTANTHELLA	UPL
THERMOPSIS RHOMBIFOLIA	PAIRIE THERMOPSIS	FACU
ZIGADENUS VENENOSUS	MEADOW DEATHCAMAS	FACU

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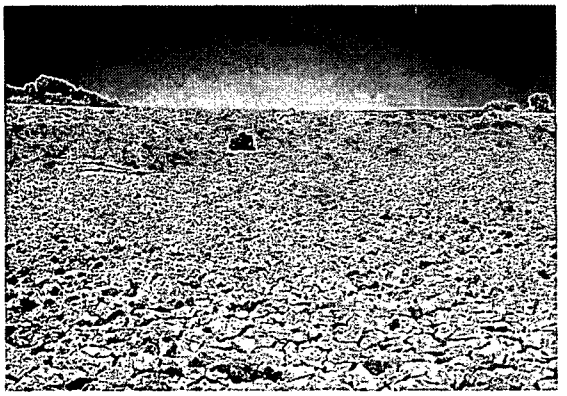
ADDENDUM 3.5-1

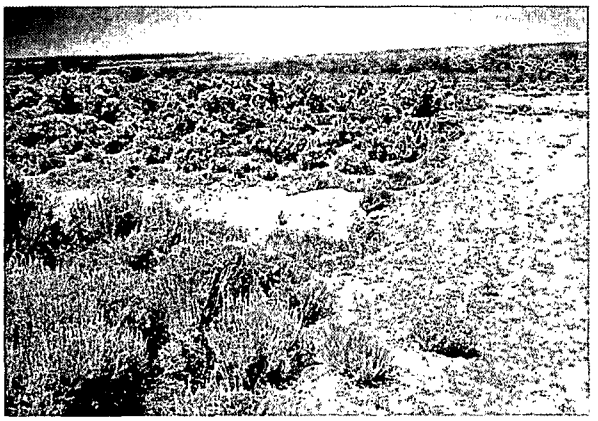
ANTELOPE AND JAB WETLANDS PHOTOGRAPHS

Antelope site

W1, ROLL 1 PHOTO 1: VIEW OF PUB WETLAND



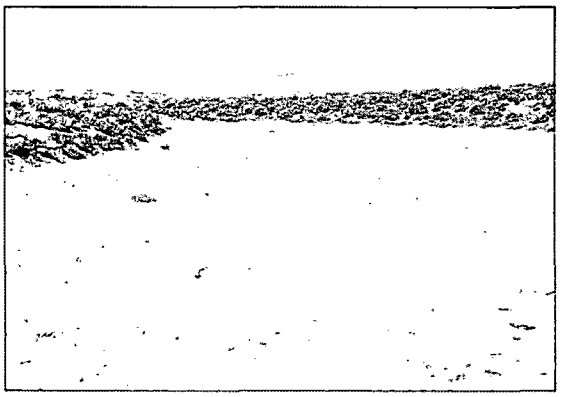
W1, ROLL 1 PHOTO 2: VIEW OF EARTHEN DAM IN DRAINAGE



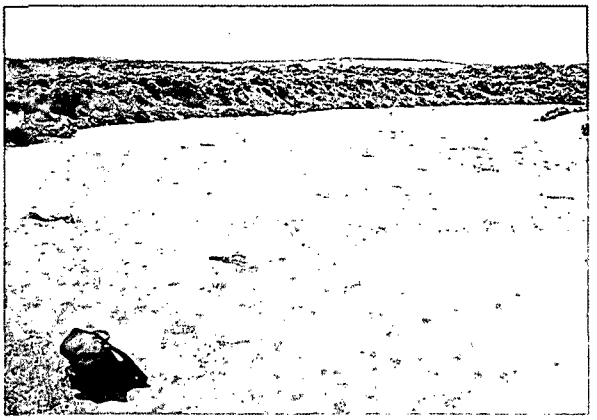
W1, ROLL 1 PHOTO 3: VIEW OF EARTHEN DAM IN DRAINAGE

W2, ROLL 1 PHOTO 4: EPHEMERAL DRAINAGE, NON-WETLAND

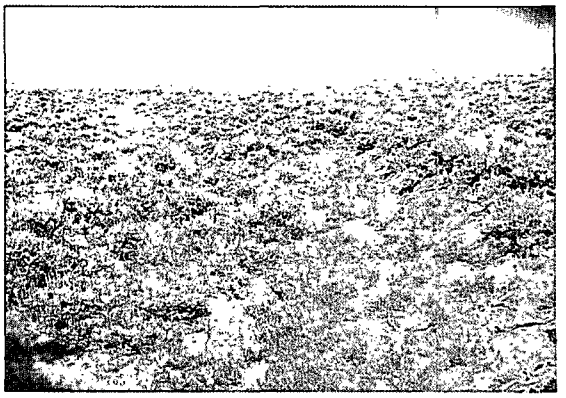
W2, ROLL 1 PHOTO 5: EPHEMERAL DRAINAGE, NON-WETLAND



W3, ROLL 1 PHOTO 6: EPHEMERAL DRAINAGE, NON-WETLAND

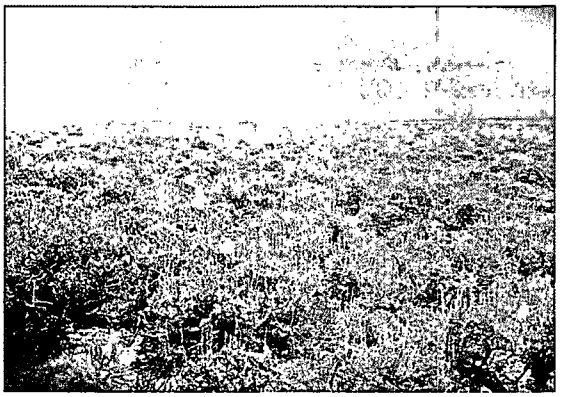


W3, ROLL 1 PHOTO 7: EPHEMERAL DRAINAGE, NON-WETLAND

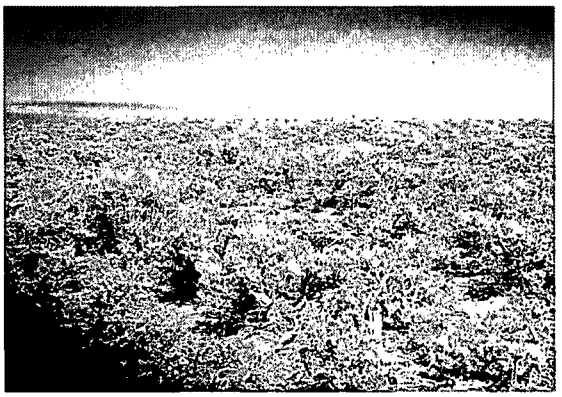


W18, ROLL 1 PHOTO 16: DRAINAGE CHANNEL, NON-WETLAND

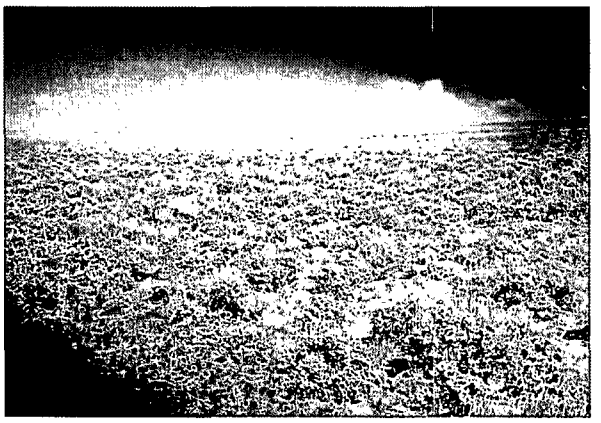
W18, ROLL 1 PHOTO 17: DRAINAGE CHANNEL, NON-WETLAND



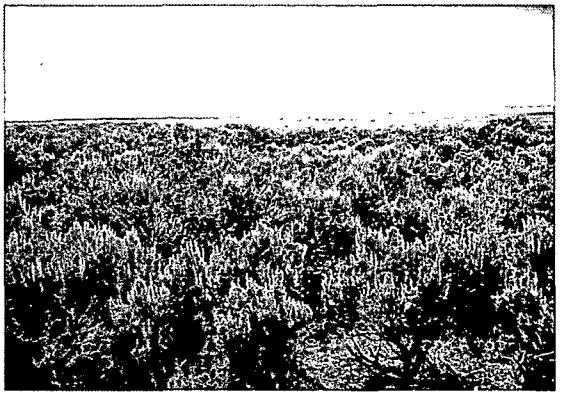
W21, ROLL 1 PHOTO 22: GENERAL VIEW



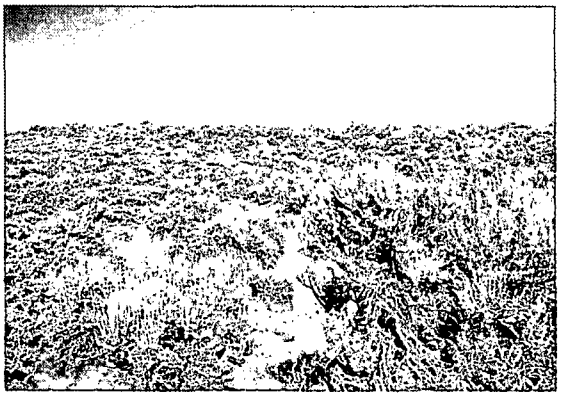
W23, ROLL 1 PHOTO 24: DRAINAGE CHANNEL, NON-WETLAND



W24, ROLL 1 PHOTO 25: DRAINAGE CHANNEL, NON-WETLAND



W26, ROLL 2 PHOTO 1: DRAINAGE CHANNEL, NON-WETLAND



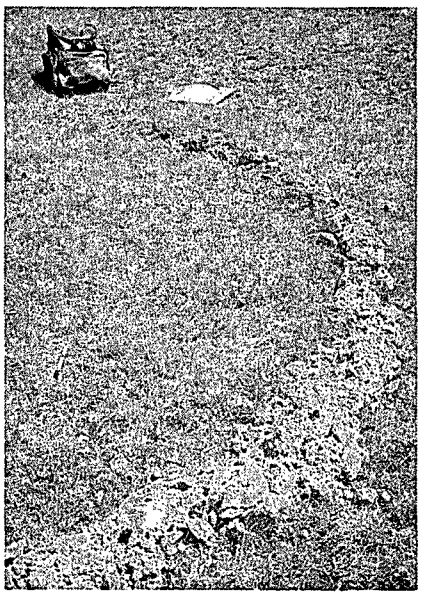
W29, ROLL 2 PHOTO 5: DRAINAGE CHANNEL, NON-WETLAND

W29, ROLL 2 PHOTO 6: DRAINAGE CHANNEL, NON-WETLAND

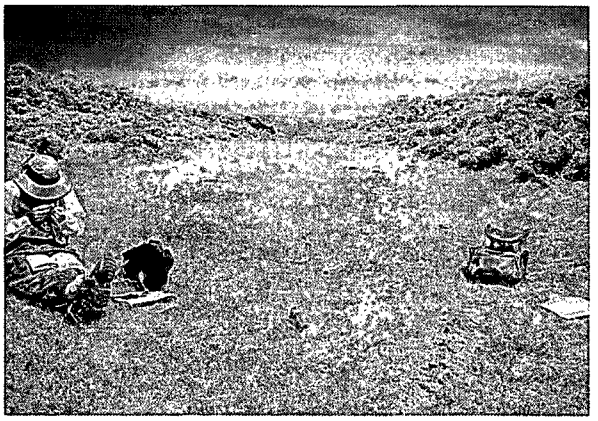
SPACE INTENTIONALLY LEFT BLANK.

JAB site

W31, ROLL 2 PHOTO 7: PUB WETLAND, DRAINAGE BOTTOM, SOIL

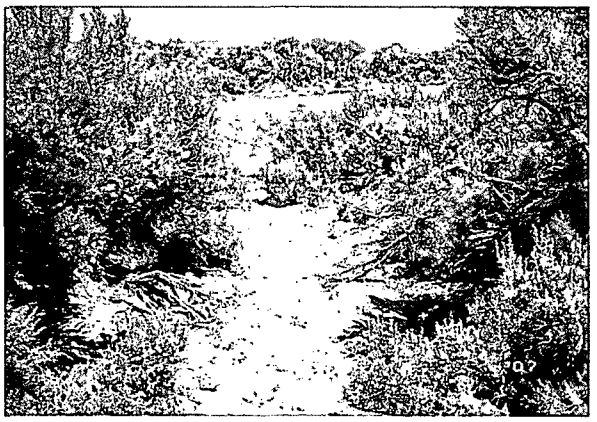


W31, ROLL2 PHOTO 8: PUB WETLAND, DRAINAGE BOTTOM, SOIL

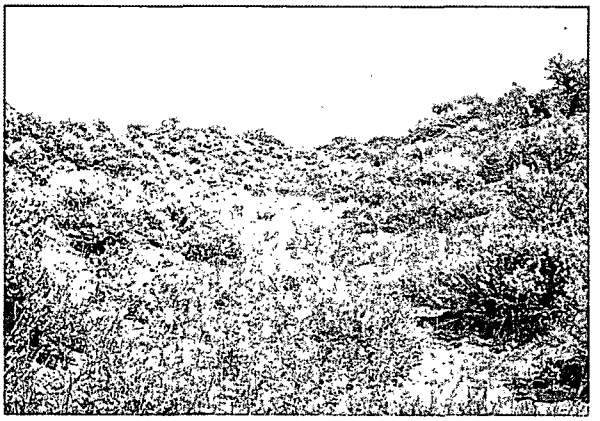


W31, ROLL 2 PHOTO 9: PUB WETLAND, DRAINAGE BOTTOM

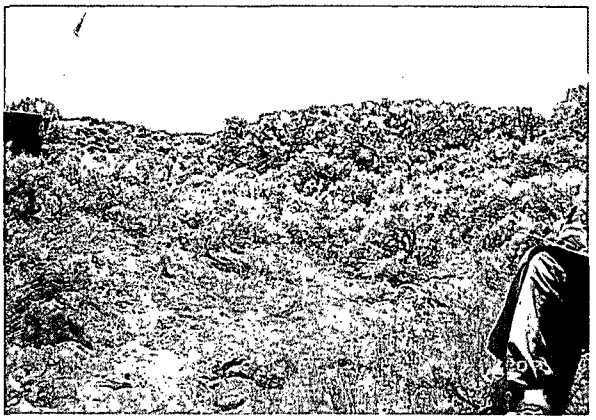
W31, ROLL 2 PHOTO 10: PUB WETLAND, DRAINAGE BOTTOM



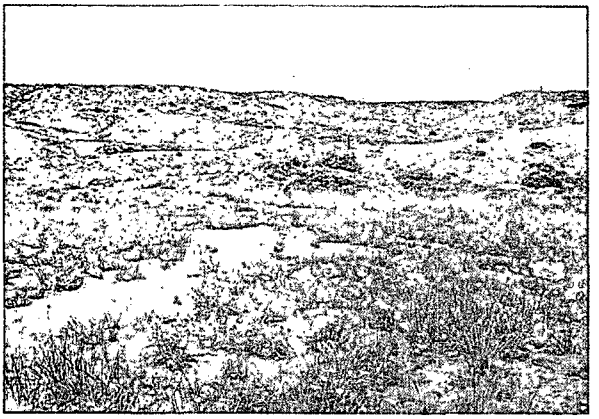
W35, ROLL 2 PHOTO 13: DRAINAGE



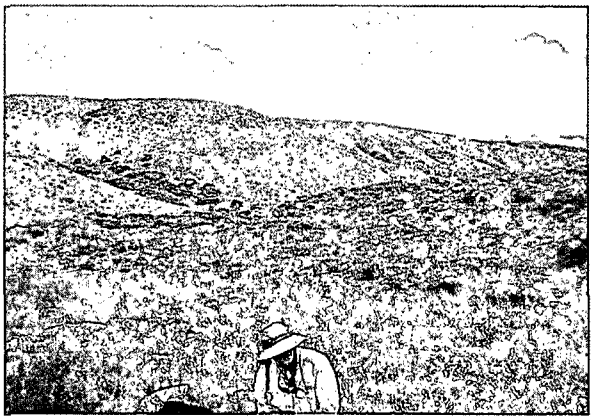
W37, ROLL 2 PHOTO 14: DRAINAGE



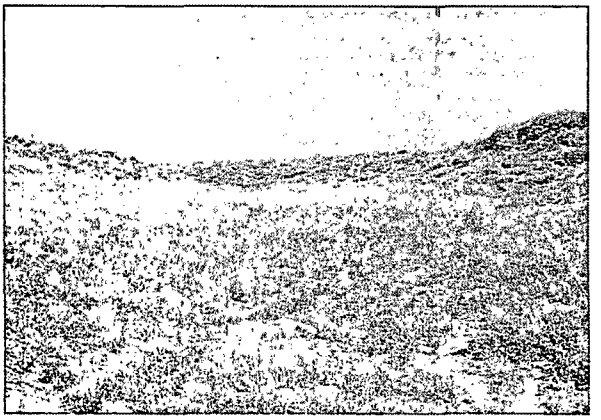
W37, ROLL 2 PHOTO 15: DRAINAGE



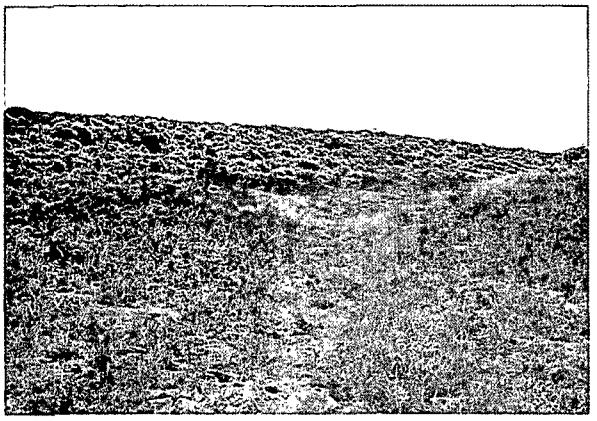
W39, ROLL 2 PHOTO 17: TERRACE SLOPE



W40, ROLL 2 PHOTO 18, EPHEMERAL WASH



W42, ROLL 2 PHOTO 19: EPHEMERAL DRAINAGE



W43, ROLL 2 PHOTO 20: EPHEMERAL DRAINAGE

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ADDENDUM 3.5-J

ANTELOPE AND JAB WETLANDS DATA FORMS –ARID WEST REGION

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - JAB	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-25-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	1
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 16 T26N R94W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	CATTLE POND-DAMMED DRAW	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	10
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	42° 13.761 N	LONG:	108°03.00 W
DATUM:	NAD 1983				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:	R4SB7		

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)					
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO	
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)				

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES	X	NO			IS THE SAMPLED AREA WITHIN A WETLAND					
HYDRIC SOIL PRESENT?	YES	X	NO				YES	X	NO		
WETLAND HYDROLOGY PRESENT	YES	X	NO								

REMARKS:
DAMMED DRAW, HEAVILY DISTURBED BY GRAZING. DAM APPROXIMATELY 7 FEET TALL, EQUAL TO HEIGHT OF SIDES OF GULLY SIGNIFICANT NON-NATIVE VEGET.
R1 P1-3

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:				
1.					NUMBER OF DOMINANT SPECIES				
2.					THAT ARE OBL, FACW, OR FAC:			2	(A)
3.									
4.					TOTAL NUMBER OF DOMINANT				
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:			3	(B)
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES				
1.	*ARTEMISIA CANA*	100	X	FACU	THAT ARE OBL, FACW, OR FAC:			66	(A/B)
2.									
3.					PREVALENCE INDEX WORKSHEET:				
4.									
5.					TOTAL % COVER OF:			MULTIPLY BY:	
	TOTAL COVER:	100							
					OBL SPECIES	3	X1=	3	
HERB STRATUM					FACW SPECIES	44	X2=	88	
1.	*POLYGONUM AVICULARE*	37	X	FACW	FAC SPECIES	55	X3=	165	
2.	*MONOLEPIS NUTTALLIANA*	25	X	FAC-	FACU SPECIES	100	X4=	400	
3.	*DISTICHLIS SPICATA*	15		FAC+	UPL SPECIES		X5=		
4.	*JUNCUS BALTICUS*	7		FACW+	COLUMN TOTALS:	202	(A)	656	(B)
5.	*HORDEUM JUBATUM*	5		FAC-	PREVALENCE INDEX = B/A =		3.24		

6.	*ARGENTINA ANSERINA*		3				OBL							
7.	*THERMOPSIS RHOMBIFOLIA*		10				FAC		HYDROPHYTIC VEGETATION INDICATORS					
8.														
9.									X	DOMINANCE TEST IS > 50%				
10.										PREVALENCE INDEX IS ≤ 3.0[1]				
	TOTAL COVER:		100							MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING				
										DATA IN REMARKS OR ON A SEPARATE SHEET)				
WOODY VINE STRATUM										PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)				
1.														
2.									[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT					
3.									HYDROPHYTIC					
	TOTAL COVER:								VEGETATION					
									PRESENT?	YES	X	NO		
% BARE GROUND IN HERB STRATUM	85		% COVER OF BIOTIC CRUST											
REMARKS: HEAVILY GRAZED														
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SOIL

Sampling Point 1

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH (INCHES)	MATRIX COLOR (MOIST)	%	REDOX FEATURES COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-20	10YR 4/2	95	10YR 5/8	5	C	M	FINE SL	EARTHEN DAM

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

	HISTOSOL (A1)	X	SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				

INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

[3]INDICATORS OF HYDROPHYTIC VEGETATION

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	AND WETLAND HYDROLOGY MUST BE PRESENT.
RESTRICTIVE LAYER (IF PRESENT): TYPE: DEPTH (INCHES):	HYDRIC SOILS PRESENT? YES X NO
REMARKS: HEAVILY DISTURBED, INCLUDING EARTHEN DAM IN GULLY	

HYDROLOGY

WETLAND HYDROLOGY INDICATORS:

PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)

	SURFACE WATER (A1)		SALT CRUSTS (B11)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)
X	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)
	WATER STAINED LEAVES (B9)		

SECONDARY INDICATORS (2 OR MORE REQUIRED)

	WATER MARKS (B1) (RIVERINE)
	SEDIMENT DEPOSITS (B2) (RIVERINE)
	DRIFT DEPOSITS (B3) (RIVERINE)
X	DRAINAGE PATTERNS (B10)
	DRY-SEASON WATER TABLE (C2)
	THIN MUCK SURFACE (C7)
	CRAYFISH BURROWS (C8)
	SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	SHALLOW AQUITARD (D3)
	FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:

SURFACE WATER PRESENT? YES NO X DEPTH (INCHES):

WATER TABLE PRESENT?	YES		NO	X	DEPTH (INCHES):						
SATURATION PRESENT? (INCLUDES CAPILLARY FRINGE)	YES		NO	X	DEPTH (INCHES):		WETLAND HYDROLOGY PRESENT?	YES	X	NO	

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:
SOIL MOIST BUT NOT SATURATED

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - JAB	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-25-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	2
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SECTION 15, T26N R94W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	EPHEMERAL DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	20
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	42°02.683' N	LONG:	108°02.683' W
DATUM:	NAD 1983				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)						
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO		
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X		
WETLAND HYDROLOGY PRESENT	YES	X	NO									
REMARKS: R1 P4-5												

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:			
1.					NUMBER OF DOMINANT SPECIES			
2.					THAT ARE OBL, FACW, OR FAC:	0	(A)	
3.								
4.					TOTAL NUMBER OF DOMINANT			
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:	0	(B)	
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES			
1.	*ARTEMISIA TRIDENTATA*	72	X	UPL	THAT ARE OBL, FACW, OR FAC:	0	(A/B)	
2.	*CHRYSOTHAMNUS VISCIDFLORUS*	28	X	UPL				
3.					PREVALENCE INDEX WORKSHEET:			
4.								
5.					TOTAL % COVER OF:	MULTIPLY BY:		
	TOTAL COVER:	100						
					OBL SPECIES	X1=		
HERB STRATUM					FACW SPECIES	X2=		
1.	*THERMOPSIS RHOMBIFOLIA*	36	X	FACU	FAC SPECIES 7	X3=	21	
2.	*ELYMUS SMITHII*	18	X	FACU	FACU SPECIES 74	X4=	296	
3.	*POA SECUNDA*	18	X	FACU	UPL SPECIES 112	X5=	560	
4.	*ALLIUM TEXTILE*	12		UPL	COLUMN TOTALS: 193	(A)	877	(B)
5.	*ZIGADENUS VENENOSUS*	2		FACU	PREVALENCE INDEX =	4.54		

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						B/A =
6.	*DESCURANIA SP.*	7		NI		
7.	*DISTICHLIS SPICATA*	7		FAC+		HYDROPHYTIC VEGETATION INDICATORS
8.						
9.						DOMINANCE TEST IS > 50%
10.						PREVALENCE INDEX IS ≤ 3.0[1]
	TOTAL COVER:	100				MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)
WOODY VINE STRATUM						PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)
1.						
2.						[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT
3.						HYDROPHYTIC
	TOTAL COVER:					VEGETATION
						PRESENT? YES ___ NO X
% BARE GROUND IN HERB STRATUM	35	% COVER OF BIOTIC CRUST				
REMARKS:						
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SOIL

Sampling Point 2

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH (INCHES)	MATRIX COLOR (MOIST)	%	REDOX FEATURES COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-4	10YR 4/2	100					SIL	W/ 5% SAND
4-15	10YR 4/3	100					SIL	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.) INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):								
TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X	

REMARKS:
HEAVILY DISTURBED, INCLUDING EARTHEN DAM IN GULLY

HYDROLOGY

WETLAND HYDROLOGY INDICATORS:					SECONDARY INDICATORS (2 OR MORE REQUIRED)
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)					WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)		SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)		DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)		DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)		DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)		THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)		CRAYFISH BURROWS (C8)
X	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)		SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)		SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)				FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	YES		NO	X	DEPTH (INCHES):								
WATER TABLE PRESENT?	YES		NO	X	DEPTH (INCHES):								
SATURATION PRESENT?	YES		NO	X	DEPTH (INCHES):			WETLAND HYDROLOGY PRESENT?	YES	X	NO		
(INCLUDES CAPILLARY FRINGE)													

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:
SOME SURFACE SOIL CRACKS BUT DONES NOT INDICATE WETLAND

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - JAB	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-25-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	3
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 17 T26N R94W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	EPHEMERAL DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	25
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	42°13.404' N	LONG:	108°04.092' W
DATUM:	NAD 1983				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)						
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO		
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X		
WETLAND HYDROLOGY PRESENT	YES		NO	X								

REMARKS:
R1 P6: UPSTREAM
R1 P7: DOWNSTREAM

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:				
1.					NUMBER OF DOMINANT SPECIES				
2.					THAT ARE OBL, FACW, OR FAC:			1	(A)
3.									
4.					TOTAL NUMBER OF DOMINANT				
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:			5	(B)
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES				
1.	*ARTEMISIA TRIDENTATA*	62	X	UPL	THAT ARE OBL, FACW, OR FAC:			20	(A/B)
2.	*CHRYSOTHAMNUS VISCIDFLORUS*	38	X	UPL					
3.					PREVALENCE INDEX WORKSHEET:				
4.									
5.					TOTAL % COVER OF:			MULTIPLY BY:	
	TOTAL COVER:	100							
					OBL SPECIES		X1=		
HERB STRATUM					FACW SPECIES	26	X2=	52	
1.	*GILIA TWEEDYI*	5		NI	FAC SPECIES		X3=		
2.	*ZIGADENUS VENENOSUS*	8		FACU	FACU SPECIES	23	X4=	92	
3.	*KOELERIA MACRANTHA*	21	X	UPL	UPL SPECIES	146	X5=	730	
4.	*JUNCUS BALTICUS*	26	X	FACW	COLUMN TOTALS:	195	(A)	874	(B)
5.	*ELYMUS SMITHII*	15		FACU	PREVALENCE INDEX =		4.48		

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					B/A =			
6.	*POA SECUNDA*	25	X	UPL				
7.					HYDROPHYTIC VEGETATION INDICATORS			
8.								
9.						DOMINANCE TEST IS > 50%		
10.						PREVALENCE INDEX IS ≤ 3.0[1]		
	TOTAL COVER:	100				MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)		
WOODY VINE STRATUM						PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)		
1.								
2.					[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT			
3.					HYDROPHYTIC VEGETATION PRESENT?	YES	NO	X
	TOTAL COVER:							
% BARE GROUND IN HERB STRATUM	45	% COVER OF BIOTIC CRUST						

REMARKS:

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SOIL — Sampling Point 3

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH (INCHES)	MATRIX COLOR (MOIST)	%	REDOX FEATURES COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-10	2.5Y 5/3	100					LS	
10-20	2.5Y 5/3	100					COURSE LS	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

RESTRICTIVE LAYER (IF PRESENT):								
TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X	

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:								SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)									**WATER MARKS (B1)** (RIVERINE)
	SURFACE WATER (A1)		**SALT CRUSTS (B11)**						**SEDIMENT DEPOSITS (B2)** (RIVERINE)
	HIGH WATER TABLE (A2)		**BIOTIC CRUST (B12)**						**DRIFT DEPOSITS (B3)** (RIVERINE)
	SATURATION (A3)		**AQUATIC INVERTEBRATES (B13)**						**DRAINAGE PATTERNS (B10)**
	WATER MARKS (B1) (NONRIVERINE)		**HYDROGEN SULFIDE ODER (C1)**						**DRY-SEASON WATER TABLE (C2)**
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		**OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)**						**THIN MUCK SURFACE (C7)**
	DRIFT DEPOSITS (B3) (NONRIVERINE)		**PRESENCE OF REDUCED IRON (C4)**						**CRAYFISH BURROWS (C8)**
	SURFACE SOIL CRACKS (B6)		**RECENT IRON REDUCTION IN PLOWED SOIL (C6)**						**SATURATION VISIBLE ON AERIAL IMAGERY (C9)**
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		**OTHER (EXPLAIN IN REMARK)**						**SHALLOW AQUITARD (D3)**
	WATER STAINED LEAVES (B9)								**FAC-NEUTRAL TEST (D5)**

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**								
WATER TABLE PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**								
SATURATION PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**			WETLAND HYDROLOGY PRESENT?	**YES**		**NO**	**X**	
(INCLUDES CAPILLARY FRINGE)													

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS **ARID WEST-VERSION 11-1-06**

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - JAB	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-25-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	4
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SECTION 17, T26N R94W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	TOPOGRAPHICAL DEPRESSION	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	3-5
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	42°13.364' N	LONG:	108°04.012' W
DATUM:	NAD 1983				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?					YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)		
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?		YES	X	NO	
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X		
WETLAND HYDROLOGY PRESENT	YES	X	NO									
REMARKS:												

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:			
1.					NUMBER OF DOMINANT SPECIES			
2.					THAT ARE OBL, FACW, OR FAC:	0	(A)	
3.								
4.					TOTAL NUMBER OF DOMINANT			
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:	5	(B)	
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES			
1.	*ARTEMISIA TRIDENTATA*	50	X	UPL	THAT ARE OBL, FACW, OR FAC:	0	(A/B)	
2.	*CHRYSOTHAMNUS VISCIDFLORUS*	50	X	UPL				
3.					PREVALENCE INDEX WORKSHEET:			
4.								
5.					TOTAL % COVER OF:	MULTIPLY BY:		
	TOTAL COVER:	100						
					OBL SPECIES	X1=		
HERB STRATUM					FACW SPECIES	X2=		
1.	*DESCURAINIA SOPHIA*	25	X	UPL	FAC SPECIES	X3=		
2.	*GAYOPHYTUM* SPECIES	25	X	NI	FACU SPECIES 13	X4=	52	
3.	*ELYMUS SMITHII*	13		FACU	UPL SPECIES 162	X5=	810	
4.	*POA SECUNDA*	37	X	UPL	COLUMN TOTALS: 175	(A)	862	(B)
5.					PREVALENCE INDEX =	4.93		

										B/A =					
6.															
7.										HYDROPHYTIC VEGETATION INDICATORS					
8.															
9.										DOMINANCE TEST IS > 50%					
10.										PREVALENCE INDEX IS ≤ 3.0[1]					
	TOTAL COVER:		100							MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING					
										DATA IN REMARKS OR ON A SEPARATE SHEET)					
WOODY VINE STRATUM										PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)					
1.															
2.										[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT					
3.										HYDROPHYTIC					
	TOTAL COVER:									VEGETATION					
										PRESENT?	YES		NO	X	
% BARE GROUND IN HERB STRATUM		20	% COVER OF BIOTIC CRUST												
REMARKS:															
US ARMY CORPS OF ENGINEERS										ARID WEST-VERSION 11-1-06					

SOIL Sampling Point 4

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-15	10YR 5/2	100					CL	
15-24	10YR 4/2	98	5YR 4/6	1	C	M	C	
			GLEY1 8/10Y	1	C	M	C	CALCIUM CARBONATE

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.) INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):								
TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X	

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:					SECONDARY INDICATORS (2 OR MORE REQUIRED)
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)					**WATER MARKS (B1) (RIVERINE)**
	SURFACE WATER (A1)		**SALT CRUSTS (B11)**		**SEDIMENT DEPOSITS (B2) (RIVERINE)**
	HIGH WATER TABLE (A2)		**BIOTIC CRUST (B12)**		**DRIFT DEPOSITS (B3) (RIVERINE)**
	SATURATION (A3)		**AQUATIC INVERTEBRATES (B13)**		**DRAINAGE PATTERNS (B10)**
	WATER MARKS (B1) (NONRIVERINE)		**HYDROGEN SULFIDE ODER (C1)**		**DRY-SEASON WATER TABLE (C2)**
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		**OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)**		**THIN MUCK SURFACE (C7)**
	DRIFT DEPOSITS (B3) (NONRIVERINE)		**PRESENCE OF REDUCED IRON (C4)**		**CRAYFISH BURROWS (C8)**
X	**SURFACE SOIL CRACKS (B6)**		**RECENT IRON REDUCTION IN PLOWED SOIL (C6)**		**SATURATION VISIBLE ON AERIAL IMAGERY (C9)**
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		**OTHER (EXPLAIN IN REMARK)**		**SHALLOW AQUITARD (D3)**
	WATER STAINED LEAVES (B9)				**FAC-NEUTRAL TEST (D5)**

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**								
WATER TABLE PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**								
SATURATION PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**		WETLAND HYDROLOGY PRESENT?	**YES**	**X**	**NO**		
(INCLUDES CAPILLARY FRINGE)												

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:
SOME SURFACE SOIL CRACKS BUT DONES NOT INDICATE WETLAND

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - JAB	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-25-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	5
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 16 T26N R94W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	SMALL DRAINAGE CHANNEL	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	3-5
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	42°13.172'N	LONG:	108°03.474' W
DATUM:	NAD 1983				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)						
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO		
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X		
WETLAND HYDROLOGY PRESENT	YES	X	NO									

REMARKS:
R1 P16: UPSTREAM
R1 P17: DOWNSTREAM

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:			
1.					NUMBER OF DOMINANT SPECIES			
2.					THAT ARE OBL, FACW, OR FAC:	0	(A)	
3.								
4.					TOTAL NUMBER OF DOMINANT			
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:	5	(B)	
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES			
1.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	50	X	UPL	THAT ARE OBL, FACW, OR FAC:	0	(A/B)	
2.	*CHRYSOTHAMNUS VISCIDFLORUS*	50	X	UPL				
3.					PREVALENCE INDEX WORKSHEET:			
4.								
5.					TOTAL % COVER OF:	MULTIPLY BY:		
	TOTAL COVER:	100						

					OBL SPECIES		X1=		
HERB STRATUM					FACW SPECIES		X2=		
1.	*ANTENNARIA MICROPHYLLA*	18		UPL	FAC SPECIES		X3=		
2.	*ELYMUS SMITHII*	25	X	FACU	FACU SPECIES	25	X4=	100	
3.	*LINANTHUS PUNGENS*	13		UPL	UPL SPECIES	175	X5=	875	
4.	*POA SECUNDA*	25	X	UPL	COLUMN TOTALS:	200	(A)	975	(B)

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5.	*NASSELLA VIRIDULA*	19		UPL	PREVALENCE INDEX = B/A =	4.88				
6.										
7.					HYDROPHYTIC VEGETATION INDICATORS					
8.										
9.						DOMINANCE TEST IS > 50%				
10.						PREVALENCE INDEX IS ≤ 3.0[1]				
	TOTAL COVER:	100				MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)				
WOODY VINE STRATUM						PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)				
1.										
2.					[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT					
3.					HYDROPHYTIC					
	TOTAL COVER:				VEGETATION					
					PRESENT?	YES		NO	X	
% BARE GROUND IN HERB STRATUM	30	% COVER OF BIOTIC CRUST								
REMARKS:										
US ARMY CORPS OF ENGINEERS									ARID WEST-VERSION 11-1-06	

SOIL

Sampling Point 5

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH (INCHES)	MATRIX COLOR (MOIST)	%	REDOX FEATURES COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-10	10YR 4/3	100					SCL	
10-20	10YR 4/2	100					SIL	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.) INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):								
TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X	

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:								SECONDARY INDICATORS (2 OR MORE REQUIRED)
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)								WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)					SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)					DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)					DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)					DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)					THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)					CRAYFISH BURROWS (C8)
X	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)					SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)					SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)							FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:														
SURFACE WATER PRESENT?	YES		NO	X	DEPTH (INCHES):									
WATER TABLE PRESENT?	YES		NO	X	DEPTH (INCHES):									
SATURATION PRESENT?	YES		NO	X	DEPTH (INCHES):			WETLAND HYDROLOGY PRESENT?	YES	X	NO			
(INCLUDES CAPILLARY FRINGE)														

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:
SOME SURFACE CRACKS BUT DOES NOT INDICATE WETLAND

US ARMY CORPS OF ENGINEERS — ARID WEST-VERSION 11-1-06

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - JAB	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-25-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	6
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 17 T26N R94W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	NONE	SLOPE (%):	0-3
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	42°13.024'N	LONG:	108°02.204'W
DATUM:	NAD 1983				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)				
ARE VEGETATION	, SOIL	, OR HYDROLOGY	SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO			
ARE VEGETATION	, SOIL	, OR HYDROLOGY	NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)						

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X		
WETLAND HYDROLOGY PRESENT	YES		NO	X								

REMARKS:
R1 P6: UPSTREAM
R1 P7: DOWNSTREAM

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:			
1.					NUMBER OF DOMINANT SPECIES			
2.					THAT ARE OBL, FACW, OR FAC:	0	(A)	
3.								
4.					TOTAL NUMBER OF DOMINANT			
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:	6	(B)	
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES			
1.	*ARTEMISIA TRIDENTATA*	62	X	UPL	THAT ARE OBL, FACW, OR FAC:	0	(A/B)	
2.	*CHRYSOTHAMNUS VISCIDFLORUS*	38	X	UPL				
3.					PREVALENCE INDEX WORKSHEET:			
4.								
5.					TOTAL % COVER OF:	MULTIPLY BY:		
	TOTAL COVER:	100						
					OBL SPECIES	X1=		
HERB STRATUM					FACW SPECIES	X2=		
1.	*ACHANTHERUM HYMENDOIDES*	20	X	UPL	FAC SPECIES	X3=		
2.	*ELYMUS SMITHII*	20	X	FACU	FACU SPECIES 20	X4=	80	
3.	*POA SECUNDA*	20	X	UPL	UPL SPECIES 180	X5=	900	
4.	*PHLOX HOODII*	34	X	UPL	COLUMN TOTALS: 200	(A)	980	(B)

5.	*STREPTANTHELLA LONGIROSTAN*		6				UPL		PREVALENCE INDEX = B/A =	4.90		
6.												
7.									HYDROPHYTIC VEGETATION INDICATORS			
8.												
9.									DOMINANCE TEST IS > 50%			
10.									PREVALENCE INDEX IS ≤ 3.0[1]			
	TOTAL COVER:		100						MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)			
									PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)			
WOODY VINE STRATUM												
1.												
2.									[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT			
3.									HYDROPHYTIC			
	TOTAL COVER:								VEGETATION			
									PRESENT?	YES	NO	X
% BARE GROUND IN HERB STRATUM			% COVER OF BIOTIC CRUST									
REMARKS:												
US ARMY CORPS OF ENGINEERS									ARID WEST-VERSION 11-1-06			

SOIL

Sampling Point 6

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-20	10YR 4/3	100					SCL	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.) INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):								
TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X	

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:						SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)							**WATER MARKS (B1)** (RIVERINE)
	SURFACE WATER (A1)		**SALT CRUSTS (B11)**				**SEDIMENT DEPOSITS (B2)** (RIVERINE)
	HIGH WATER TABLE (A2)		**BIOTIC CRUST (B12)**				**DRIFT DEPOSITS (B3)** (RIVERINE)
	SATURATION (A3)		**AQUATIC INVERTEBRATES (B13)**				**DRAINAGE PATTERNS (B10)**
	WATER MARKS (B1) (NONRIVERINE)		**HYDROGEN SULFIDE ODER (C1)**				**DRY-SEASON WATER TABLE (C2)**
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		**OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)**				**THIN MUCK SURFACE (C7)**
	DRIFT DEPOSITS (B3) (NONRIVERINE)		**PRESENCE OF REDUCED IRON (C4)**				**CRAYFISH BURROWS (C8)**
	SURFACE SOIL CRACKS (B6)		**RECENT IRON REDUCTION IN PLOWED SOIL (C6)**				**SATURATION VISIBLE ON AERIAL IMAGERY (C9)**
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		**OTHER (EXPLAIN IN REMARK)**				**SHALLOW AQUITARD (D3)**
	WATER STAINED LEAVES (B9)						**FAC-NEUTRAL TEST (D5)**

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**								
WATER TABLE PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**								
SATURATION PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**		WETLAND HYDROLOGY PRESENT?	**YES**		**NO**	**X**		
(INCLUDES CAPILLARY FRINGE)													

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS **ARID WEST-VERSION 11-1-06**

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - JAB	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-25-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	7
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 21 T26N R94W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	0-3
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	42°12.278'N	LONG:	108°03.862'W
DATUM:	NAD 1983				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)				
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)			

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND					
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X	
WETLAND HYDROLOGY PRESENT	YES		NO	X							
REMARKS: R1 P24											

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:			
1.					NUMBER OF DOMINANT SPECIES			
2.					THAT ARE OBL, FACW, OR FAC:	0	(A)	
3.								
4.					TOTAL NUMBER OF DOMINANT			
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:	6	(B)	
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES			
1.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	100	X	UPL	THAT ARE OBL, FACW, OR FAC:	0	(A/B)	
2.								
3.					PREVALENCE INDEX WORKSHEET:			
4.								
5.					TOTAL % COVER OF:	MULTIPLY BY:		
	TOTAL COVER:	100						
					OBL SPECIES		X1=	
HERB STRATUM					FACW SPECIES		X2=	
1.	*PHLOX HOODII*	14		UPL	FAC SPECIES		X3=	
2.	*ACHANTHERUM HYMENDOIDES*	33	X	UPL	FACU SPECIES	33	X4=	132
3.	*ELYMUS SMITHII*	33	X	FACU	UPL SPECIES	167	X5=	835
4.	*ELYMUS ELYMOIDES*	20	X	FACU-	COLUMN TOTALS:	200	(A)	967 (B)
5.					PREVALENCE INDEX =	4.84		

										B/A =					
6.															
7.										HYDROPHYTIC VEGETATION INDICATORS					
8.															
9.											DOMINANCE TEST IS > 50%				
10.											PREVALENCE INDEX IS ≤ 3.0[1]				
	TOTAL COVER:		100								MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING				
											DATA IN REMARKS OR ON A SEPARATE SHEET)				
WOODY VINE STRATUM											PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)				
1.															
2.										[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT					
3.										HYDROPHYTIC					
	TOTAL COVER:									VEGETATION					
										PRESENT?	YES		NO	X	
% BARE GROUND IN HERB STRATUM		40	% COVER OF BIOTIC CRUST												
REMARKS:															
US ARMY CORPS OF ENGINEERS										ARID WEST-VERSION 11-1-06					

SOIL Sampling Point 7

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-12	2.5Y 5/3	100					SICL	
12-22	2.5Y 5/3	100					C	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

					INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:
	HISTOSOL (A1)		**SANDY REDOX (S5)**		**1 CM MUCK (A9)** (LRR C)
	HISTIC EPIPEDON (A2)		**STRIPPED MATRIX (S6)**		**2 CM MUCK (A10)** (LRR B)
	BLACK HISTIC (A3)		**LOAMY MUCKY MINERAL (F1)**		**REDUCED VERTIC (F18)**
	HYDROGEN SULFIDE (A4)		**LOAMY GLEYED MATRIX (F2)**		**RED PARENT MATERIAL (TF2)**
	STRATIFIED LAYERS (A5) (LRR C)		**DEPLETED MATRIX (F3)**		**OTHER (EXPLAIN IN REMARKS)**
	1 CM MUCK (A9) (LRR D)		**REDOX DARK SURFACE (F6)**		
	DEPLETED BELOW DARK SURFACE (A11)		**DEPLETED DARK SURFACE (F7)**		
	THICK DARK SURFACE (A12)		**REDOX DEPRESSIONS (F8)**		
	SANDY MUCKY MINERAL (S1)		**VERNAL POOLS (F9)**		
	SANDY GLEYED MATRIX (S4)				**[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.**

RESTRICTIVE LAYER (IF PRESENT):

TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	**YES**		**NO**	**X**	

REMARKS:

HYDROLOGY

WETLAND HYDROLOGY INDICATORS:					SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)						**WATER MARKS (B1)** (RIVERINE)
	SURFACE WATER (A1)		**SALT CRUSTS (B11)**			**SEDIMENT DEPOSITS (B2)** (RIVERINE)
	HIGH WATER TABLE (A2)		**BIOTIC CRUST (B12)**			**DRIFT DEPOSITS (B3)** (RIVERINE)
	SATURATION (A3)		**AQUATIC INVERTEBRATES (B13)**			**DRAINAGE PATTERNS (B10)**
	WATER MARKS (B1) (NONRIVERINE)		**HYDROGEN SULFIDE ODER (C1)**			**DRY-SEASON WATER TABLE (C2)**
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		**OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)**			**THIN MUCK SURFACE (C7)**
	DRIFT DEPOSITS (B3) (NONRIVERINE)		**PRESENCE OF REDUCED IRON (C4)**			**CRAYFISH BURROWS (C8)**
	SURFACE SOIL CRACKS (B6)		**RECENT IRON REDUCTION IN PLOWED SOIL (C6)**			**SATURATION VISIBLE ON AERIAL IMAGERY (C9)**
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		**OTHER (EXPLAIN IN REMARK)**			**SHALLOW AQUITARD (D3)**
	WATER STAINED LEAVES (B9)					**FAC-NEUTRAL TEST (D5)**

FIELD OBSERVATIONS:									
SURFACE WATER PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**				
WATER TABLE PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**				
SATURATION PRESENT?	**YES**		**NO**	**X**	**DEPTH (INCHES):**		WETLAND HYDROLOGY PRESENT?	**YES**	
(INCLUDES CAPILLARY FRINGE)									

Note: the Wetland Hydrology Present row continues: **NO** | **X**

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS **ARID WEST-VERSION 11-1-06**

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - JAB	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-26-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	8
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 22 T26N R94W		

LANDFORM (HILLSLOPE, TERRACE, ETC.)	DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	NONE	SLOPE (%):	0

SUBREGION (LRP):	INTERIOR DESERTS	LAT:	42°12.450'N	LONG:	108°02.254'W	DATUM:	NAD 1983

SOIL MAP UNIT NAME:		NWI CLASSIFICATION:	

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)

ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO		
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X		
WETLAND HYDROLOGY PRESENT	YES		NO	X								
REMARKS: R1 P25												

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:			
1.					NUMBER OF DOMINANT SPECIES			
2.					THAT ARE OBL, FACW, OR FAC:	0	(A)	
3.								
4.					TOTAL NUMBER OF DOMINANT			
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:	3	(B)	
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES			
1.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	100	X	UPL	THAT ARE OBL, FACW, OR FAC:	0	(A/B)	
2.								
3.					PREVALENCE INDEX WORKSHEET:			
4.								
5.					TOTAL % COVER OF:	MULTIPLY BY:		
	TOTAL COVER:	100						

					OBL SPECIES		X1=		
HERB STRATUM					FACW SPECIES		X2=		
1.	*PHLOX HOODII*	11		UPL	FAC SPECIES		X3=		
2.	*ACHANTHERUM HYMENDOIDES*	36	X	UPL	FACU SPECIES	53	X4=	212	
3.	*ELYMUS ELYMOIDES*	36	X	FACU-	UPL SPECIES	147	X5=	735	
4.	*POA SECUNDA*	17		FACU	COLUMN TOTALS:	200	(A)	947	(B)
5.					PREVALENCE INDEX =		4.74		

									B/A =						
6.															
7.									HYDROPHYTIC VEGETATION INDICATORS						
8.															
9.										DOMINANCE TEST IS > 50%					
10.										PREVALENCE INDEX IS ≤ 3.0[1]					
	TOTAL COVER:		100							MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING					
										DATA IN REMARKS OR ON A SEPARATE SHEET)					
WOODY VINE STRATUM										PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)					
1.															
2.									[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT						
3.									HYDROPHYTIC						
	TOTAL COVER:								VEGETATION						
									PRESENT?	YES		NO	X		
% BARE GROUND IN HERB STRATUM			% COVER OF BIOTIC CRUST												
REMARKS:															
US ARMY CORPS OF ENGINEERS									ARID WEST-VERSION 11-1-06						

SOIL Sampling Point 8

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-12	10YR 5/3	97	2.5YR 2.5/3	3	C	M	SICL	
12-20	10YR 4/3	97	2.5YR 2.5/3	3	C	M	C	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

					INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:
	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):

TYPE:

DEPTH (INCHES):

HYDRIC SOILS PRESENT? YES NO X

REMARKS:

HYDROLOGY

WETLAND HYDROLOGY INDICATORS:					SECONDARY INDICATORS (2 OR MORE REQUIRED)
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)					WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)		SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)		DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)		DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)		DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)		THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)		CRAYFISH BURROWS (C8)
	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)		SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)		SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)				FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:														
SURFACE WATER PRESENT?	YES		NO	X	DEPTH (INCHES):									
WATER TABLE PRESENT?	YES		NO	X	DEPTH (INCHES):									
SATURATION PRESENT?	YES		NO	X	DEPTH (INCHES):			WETLAND HYDROLOGY PRESENT?	YES		NO	X		
(INCLUDES CAPILLARY FRINGE)														

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS — ARID WEST-VERSION 11-1-06

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - JAB	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-26-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	9
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 23 T26N R94W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	NONE	SLOPE (%):	0-3
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	42°13.077'N	LONG:	108°01.162'W
DATUM:	NAD 1983				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			
ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)
ARE VEGETATION	, SOIL	, OR HYDROLOGY	SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X NO
ARE VEGETATION	, SOIL	, OR HYDROLOGY	NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)		

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND					
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X	
WETLAND HYDROLOGY PRESENT	YES		NO	X							

REMARKS:
R2 P1
R2 P2

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:				
1.					NUMBER OF DOMINANT SPECIES				
2.					THAT ARE OBL, FACW, OR FAC:			0	(A)
3.									
4.					TOTAL NUMBER OF DOMINANT				
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:			2	(B)
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES				
1.	*ARTEMISIA TRIDENTATA*	83	X	UPL	THAT ARE OBL, FACW, OR FAC:			0	(A/B)
2.	*CHRYSOTHAMNUS VISCIDFLORUS*	17		UPL					
3.					PREVALENCE INDEX WORKSHEET:				
4.									
5.					TOTAL % COVER OF:			MULTIPLY BY:	
	TOTAL COVER:	100							
					OBL SPECIES		X1=		
HERB STRATUM					FACW SPECIES		X2=		
1.	*GAYOPHYTUM* SPECIES	56	X	NI	FAC SPECIES		X3=		
2.	*CRYPTANTHA* SPECIES	18		NL	FACU SPECIES	26	X4=	104	
3.	*ELYMUS SMITHII*	13		FACU	UPL SPECIES	100	X5=	500	
4.	*ELYMUS ELYMOIDES*	13		FACU-	COLUMN TOTALS:	126	(A)	604	(B)
5.					PREVALENCE INDEX =		4.79		

										B/A =			
6.													
7.										HYDROPHYTIC VEGETATION INDICATORS			
8.													
9.											DOMINANCE TEST IS > 50%		
10.											PREVALENCE INDEX IS ≤ 3.0[1]		
	TOTAL COVER:		100								MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)		
WOODY VINE STRATUM											PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)		
1.													
2.										[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT			
3.										HYDROPHYTIC			
	TOTAL COVER:									VEGETATION			
										PRESENT?	YES	NO	X
% BARE GROUND IN HERB STRATUM	20		% COVER OF BIOTIC CRUST										
REMARKS:													
US ARMY CORPS OF ENGINEERS													ARID WEST-VERSION 11-1-06

SOIL

Sampling Point 9

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH		MATRIX				REDOX FEATURES											
(INCHES)		COLOR (MOIST)		%		COLOR (MOIST)		%		TYPE[1]		LOC[2]		TEXTURE		REMARKS
0-20		10YR 4/4		100										SL		

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

					INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:
	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):

TYPE:

DEPTH (INCHES):

HYDRIC SOILS PRESENT? YES NO X

REMARKS:

HYDROLOGY

WETLAND HYDROLOGY INDICATORS:								SECONDARY INDICATORS (2 OR MORE REQUIRED)
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)								WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)					SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)					DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)					DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)					DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)					THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)					CRAYFISH BURROWS (C8)
	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)					SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)					SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)							FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	YES		NO	X	DEPTH (INCHES):								
WATER TABLE PRESENT?	YES		NO	X	DEPTH (INCHES):								
SATURATION PRESENT?	YES		NO	X	DEPTH (INCHES):			WETLAND HYDROLOGY PRESENT?	YES		NO	X	
(INCLUDES CAPILLARY FRINGE)													

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS — ARID WEST-VERSION 11-1-06

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - JAB	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-26-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	10
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 24 T26N R94W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	0-3
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	42°12.982'N	LONG:	108°00.333'W
DATUM:	NAD 1983				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)				
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)			

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND					
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X	
WETLAND HYDROLOGY PRESENT	YES		NO	X							

REMARKS:
R1 P6: UPSTREAM
R1 P7: DOWNSTREAM

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:				
1.					NUMBER OF DOMINANT SPECIES				
2.					THAT ARE OBL, FACW, OR FAC:			0	(A)
3.									
4.					TOTAL NUMBER OF DOMINANT				
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:			6	(B)
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES				
1.	*ARTEMISIA TRIDENTATA*	40	X	UPL	THAT ARE OBL, FACW, OR FAC:			0	(A/B)
2.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	30	X	UPL					
3.	*CHRYSOTHAMNUS VISCIDFLORUS*	25	X	UPL	PREVALENCE INDEX WORKSHEET:				
4.	*CHRYSOTHAMNUS* SPECIES	5		UPL					
5.					TOTAL % COVER OF:			MULTIPLY BY:	
	TOTAL COVER:	100							
					OBL SPECIES		X1=		
HERB STRATUM					FACW SPECIES		X2=		
1.	*LUPINUS SERICEUS*	37	X	UPL	FAC SPECIES		X3=		
2.	*THEMOPSIS RHOMBIFOLIA*	24	X	FACU	FACU SPECIES	24	X4=	96	
3.	*ELYMUS SMITHII*	24	X	UPL	UPL SPECIES	170	X5=	850	
4.	*LINANTHUS PUNGENS*	6		UPL	COLUMN TOTALS:	194	(A)	946	(B)
5.	*CRYPTANTHA*	6		NL	PREVALENCE INDEX =		4.88		

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							B/A =			
6.	*EREMOGONE HOOKERI*	3			UPL					
7.							HYDROPHYTIC VEGETATION INDICATORS			
8.										
9.								DOMINANCE TEST IS > 50%		
10.								PREVALENCE INDEX IS ≤ 3.0[1]		
	TOTAL COVER:	100						MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)		
WOODY VINE STRATUM								PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)		
1.										
2.							[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT			
3.							HYDROPHYTIC			
	TOTAL COVER:						VEGETATION			
							PRESENT?	YES	NO	X
% BARE GROUND IN HERB STRATUM	19	% COVER OF BIOTIC CRUST								
REMARKS:										
US ARMY CORPS OF ENGINEERS										ARID WEST-VERSION 11-1-06

SOIL

Sampling Point 10

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-10	10YR 3/3	100					LS	
10-20	10YR 4/3	100					SL	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

						INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:
	HISTOSOL (A1)		SANDY REDOX (S5)			1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)			2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)			REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)			RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)			OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)			
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)			
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)			
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)			
	SANDY GLEYED MATRIX (S4)					[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):

TYPE:									
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X		

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:								SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)									WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)						SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)						DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)						DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)						DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)						THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)						CRAYFISH BURROWS (C8)
	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)						SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)						SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)								FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:														
SURFACE WATER PRESENT?	YES		NO	X	DEPTH (INCHES):									
WATER TABLE PRESENT?	YES		NO	X	DEPTH (INCHES):									
SATURATION PRESENT?	YES		NO	X	DEPTH (INCHES):			WETLAND HYDROLOGY PRESENT?	YES		NO	X		
(INCLUDES CAPILLARY FRINGE)														

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	11
INVESTIGATOR(S):	LYNN MOORE AND JONATHAN SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 8, T26N R92W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	DRAINAGE BOTTOM	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	NONE	SLOPE (%):	1%
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	265201.29	LONG:	46800002.2
DATUM:	NAD 1983, UTM ZONE 13				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:	PEMC		

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)							
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO			
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)						

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES	X	NO			IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES	X	NO				YES	X	NO			
WETLAND HYDROLOGY PRESENT	YES	X	NO									

REMARKS:
R2 P7 - 11
WETLAND IN THE DRAINAGE AREA INCLUDING WAYPOINTS 32, 33, 34 PLUS 10 FEET ON EACH SIDE

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:				
1.					NUMBER OF DOMINANT SPECIES				
2.					THAT ARE OBL, FACW, OR FAC:			2	(A)
3.									
4.					TOTAL NUMBER OF DOMINANT				
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:			2	(B)
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES				
1.					THAT ARE OBL, FACW, OR FAC:			100	(A/B)
2.									
3.					PREVALENCE INDEX WORKSHEET:				
4.									
5.					TOTAL % COVER OF:			MULTIPLY BY:	
	TOTAL COVER:								
					OBL SPECIES		X1=		
HERB STRATUM					FACW SPECIES	73	X2=	146	
1.	*CAREX PRAEGOALIS*	40	X	FACW	FAC SPECIES		X3=		
2.	*POA PRATENSIS*	17		FACU	FACU SPECIES	17	X4=	68	
3.	*JUNCUS BALTICUS*	13		FACW	UPL SPECIES	10	X5=	50	
4.	*POTENTILLA CONCINNA*	10		UPL	COLUMN TOTALS:	100	(A)	264	(B)
5.	*JUNCUS SP.*	20	X	FACW	PREVALENCE INDEX = B/A =		2.64		

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6.				
7.				HYDROPHYTIC VEGETATION INDICATORS
8.				
9.			X	DOMINANCE TEST IS > 50%
10.			X	PREVALENCE INDEX IS ≤ 3.0[1]
	TOTAL COVER:	100		MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)
WOODY VINE STRATUM				PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)
1.				
2.				[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT
3.				HYDROPHYTIC
	TOTAL COVER:			VEGETATION
				PRESENT? YES X NO
% BARE GROUND IN HERB STRATUM	5	% COVER OF BIOTIC CRUST		
REMARKS:				
US ARMY CORPS OF ENGINEERS				ARID WEST-VERSION 11-1-06

SOIL — Sampling Point 11

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH (INCHES)	MATRIX COLOR (MOIST)	%	REDOX FEATURES COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-8	7.5YR 3/2	100					SL	
8-36	10YR 5/4	80	2.5YR 4/8	20	C	M	SL	
36-50	5YR 7/4	60	10YR 6/8	20	C	M	SL	

						5Y 7/3		20		RM		M		SCL		
50-60		5Y 7/2		100										SL		

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

	HISTOSOL (A1)	X	SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
X	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):									
TYPE:									
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES	X	NO			

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:					SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)						WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)			SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)		X	DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)		X	DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)			DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)			THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)			CRAYFISH BURROWS (C8)
	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)			SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)			SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)				X	FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	YES		NO	X	DEPTH (INCHES):								
WATER TABLE PRESENT?	YES	X	NO		DEPTH (INCHES):	60							
SATURATION PRESENT?	YES	X	NO		DEPTH (INCHES):	54		WETLAND HYDROLOGY PRESENT?	YES	X	NO		
(INCLUDES CAPILLARY FRINGE)													

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:
REDUCED IRON BEGINS ABOUT 3 FEET BELOW THE SURFACE
RIVERINE DEPOSITS INCLUDE SAGEBRUSH TWIGS AND BARK.

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	12
INVESTIGATOR(S):	LYNN MOORE AND JONATHON SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 20, T26N R92W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	3-5%
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	264973.46	LONG:	4677702.53
DATUM:	NAD 1983, UTM ZONE 13				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?						YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)	
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?			YES	X	NO
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND					
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X	
WETLAND HYDROLOGY PRESENT	YES		NO	X							
REMARKS: R2 P 12-13											

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:			
1.					NUMBER OF DOMINANT SPECIES			
2.					THAT ARE OBL, FACW, OR FAC:	0	(A)	
3.								
4.					TOTAL NUMBER OF DOMINANT			
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:	5	(B)	
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES			
1.	*ARTEMISIA TRIDENTATA*	75	X	UPL	THAT ARE OBL, FACW, OR FAC:	0	(A/B)	
2.	*CHRYSOTHAMNUS VISCIDIFLORUS*	25	X	UPL				
3.					PREVALENCE INDEX WORKSHEET:			
4.								
5.					TOTAL % COVER OF:	MULTIPLY BY:		
	TOTAL COVER:	100						

					OBL SPECIES		X1=		
HERB STRATUM					FACW SPECIES		X2=		
1.	*ELYMUS SMITHII*	44	X	FACU	FAC SPECIES	10	X3=	30	
2.	*GAYOPHYTUM DIFFUSUM*	26	X	NI	FACU SPECIES	44	X4=	176	
3.	*ALYSSUM DESERTORUM*	20	X	UPL	UPL SPECIES		X5=		
4.	*DISTICHLIS SPICATA*	10		FAC+	COLUMN TOTALS:	54	(A)	206	(B)
5.					PREVALENCE INDEX =		3.81		

									B/A =						
6.															
7.									HYDROPHYTIC VEGETATION INDICATORS						
8.															
9.										DOMINANCE TEST IS > 50%					
10.										PREVALENCE INDEX IS ≤ 3.0[1]					
	TOTAL COVER:		100							MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING					
										DATA IN REMARKS OR ON A SEPARATE SHEET)					
WOODY VINE STRATUM										PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)					
1.															
2.									[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT						
3.									HYDROPHYTIC						
	TOTAL COVER:								VEGETATION						
									PRESENT?	YES		NO	X		
% BARE GROUND IN HERB STRATUM		25	% COVER OF BIOTIC CRUST												
REMARKS:															
US ARMY CORPS OF ENGINEERS									ARID WEST-VERSION 11-1-06						

SOIL

Sampling Point 12

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES				TEXTURE	REMARKS
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]		
0-20	10YR 4/3	100					S	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

	HISTOSOL (A1)		**SANDY REDOX (S5)**		**1 CM MUCK (A9)** (LRR C)
	HISTIC EPIPEDON (A2)		**STRIPPED MATRIX (S6)**		**2 CM MUCK (A10)** (LRR B)
	BLACK HISTIC (A3)		**LOAMY MUCKY MINERAL (F1)**		**REDUCED VERTIC (F18)**
	HYDROGEN SULFIDE (A4)		**LOAMY GLEYED MATRIX (F2)**		**RED PARENT MATERIAL (TF2)**
	STRATIFIED LAYERS (A5) (LRR C)		**DEPLETED MATRIX (F3)**		**OTHER (EXPLAIN IN REMARKS)**
	1 CM MUCK (A9) (LRR D)		**REDOX DARK SURFACE (F6)**		
	DEPLETED BELOW DARK SURFACE (A11)		**DEPLETED DARK SURFACE (F7)**		
	THICK DARK SURFACE (A12)		**REDOX DEPRESSIONS (F8)**		
	SANDY MUCKY MINERAL (S1)		**VERNAL POOLS (F9)**		
	SANDY GLEYED MATRIX (S4)				**[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.**

INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

RESTRICTIVE LAYER (IF PRESENT):

TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	**YES**		**NO**	**X**	

REMARKS:

HYDROLOGY

WETLAND HYDROLOGY INDICATORS:					SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)						**WATER MARKS (B1)** (RIVERINE)
	SURFACE WATER (A1)		**SALT CRUSTS (B11)**			**SEDIMENT DEPOSITS (B2)** (RIVERINE)
	HIGH WATER TABLE (A2)		**BIOTIC CRUST (B12)**			**DRIFT DEPOSITS (B3)** (RIVERINE)
	SATURATION (A3)		**AQUATIC INVERTEBRATES (B13)**			**DRAINAGE PATTERNS (B10)**
	WATER MARKS (B1) (NONRIVERINE)		**HYDROGEN SULFIDE ODER (C1)**			**DRY-SEASON WATER TABLE (C2)**
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		**OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)**			**THIN MUCK SURFACE (C7)**
	DRIFT DEPOSITS (B3) (NONRIVERINE)		**PRESENCE OF REDUCED IRON (C4)**			**CRAYFISH BURROWS (C8)**
	SURFACE SOIL CRACKS (B6)		**RECENT IRON REDUCTION IN PLOWED SOIL (C6)**			**SATURATION VISIBLE ON AERIAL IMAGERY (C9)**
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		**OTHER (EXPLAIN IN REMARK)**			**SHALLOW AQUITARD (D3)**
	WATER STAINED LEAVES (B9)					**FAC-NEUTRAL TEST (D5)**

FIELD OBSERVATIONS:														
SURFACE WATER PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**									
WATER TABLE PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**									
SATURATION PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**		WETLAND HYDROLOGY PRESENT?		**YES**		**NO**	**X**		
(INCLUDES CAPILLARY FRINGE)														

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS **ARID WEST-VERSION 11-1-06**

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	13
INVESTIGATOR(S):	LYNN MOORE AND JONATHON SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 16, T26N R92W		

LANDFORM (HILLSLOPE, TERRACE, ETC.)	DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	3-5%		
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	266128.13	LONG:	4678316.18	DATUM:	NAD 1983, UTM ZONE 13
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:					

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)					
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO	
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)				

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND					
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X	
WETLAND HYDROLOGY PRESENT	YES		NO	X							
REMARKS:											

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:				
1.					NUMBER OF DOMINANT SPECIES				
2.					THAT ARE OBL, FACW, OR FAC:			0	(A)
3.									
4.					TOTAL NUMBER OF DOMINANT				
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:			5	(B)
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES				
1.	*ARTEMISIA TRIDENTATA*	50	X	UPL	THAT ARE OBL, FACW, OR FAC:			0	(A/B)
2.	CHRYSOTHAMNUS VISCIDIFLORUS	50	X	UPL					
3.					PREVALENCE INDEX WORKSHEET:				
4.									
5.					TOTAL % COVER OF:			MULTIPLY BY:	
	TOTAL COVER:	100							
					OBL SPECIES		X1=		
HERB STRATUM					FACW SPECIES		X2=		
1.	*ALYSSUM DESERTORUM*	40	X	UPL	FAC SPECIES	7	X3=	21	
2.	*CASTILLEJA* SP.	7		FAC	FACU SPECIES	33	X4=	132	
3.	*SALSOLA TRAGUS*	7		FACU	UPL SPECIES	140	X5=	700	
4.	*ELYMUS SMITHII*	26	X	FACU	COLUMN TOTALS:	180	(A)	853	(B)
5.	*GAYOPHYTUM DIFFUSUM*	20	X	NI	PREVALENCE INDEX =		4.74		

									B/A =						
6.															
7.									HYDROPHYTIC VEGETATION INDICATORS						
8.															
9.										DOMINANCE TEST IS > 50%					
10.										PREVALENCE INDEX IS ≤ 3.0[1]					
	TOTAL COVER:		100							MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING					
										DATA IN REMARKS OR ON A SEPARATE SHEET)					
WOODY VINE STRATUM										PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)					
1.															
2.									[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT						
3.									HYDROPHYTIC						
	TOTAL COVER:								VEGETATION						
									PRESENT?	YES		NO	X		
% BARE GROUND IN HERB STRATUM		25	% COVER OF BIOTIC CRUST												
REMARKS:															
US ARMY CORPS OF ENGINEERS									ARID WEST-VERSION 11-1-06						

SOIL

Sampling Point 13

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-15	10YR 4/3	100					S	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

						INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:
	HISTOSOL (A1)		SANDY REDOX (S5)			1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)			2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)			REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)			RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)			OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)			
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)			
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)			
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)			
	SANDY GLEYED MATRIX (S4)					[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):

TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X	

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:								SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)									WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)						SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)						DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)						DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)						DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)						THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)						CRAYFISH BURROWS (C8)
	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)						SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)						SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)								FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:															
SURFACE WATER PRESENT?	YES		NO	X	DEPTH (INCHES):										
WATER TABLE PRESENT?	YES		NO	X	DEPTH (INCHES):										
SATURATION PRESENT?	YES		NO	X	DEPTH (INCHES):			WETLAND HYDROLOGY PRESENT?	YES		NO	X			
(INCLUDES CAPILLARY FRINGE)															

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS — ARID WEST-VERSION 11-1-06

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	14
INVESTIGATOR(S):	LYNN MOORE AND JONATHON SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 16, T26N R92W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	DRAINAGE CHANNEL	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	20-25
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	267578.57	LONG:	4678828.96
DATUM:	NAD 1983, UTM ZONE 13				
SOIL MAP UNIT NAME:					

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?					YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)			
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?			YES	X	NO	
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)						

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X		
WETLAND HYDROLOGY PRESENT	YES		NO	X								

REMARKS:
R2 P 14-15

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:				
1.					NUMBER OF DOMINANT SPECIES				
2.					THAT ARE OBL, FACW, OR FAC:			1	(A)
3.									
4.					TOTAL NUMBER OF DOMINANT				
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:			4	(B)
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES				
1.	*ARTEMISIA TRIDENTATA*	30	X	UPL	THAT ARE OBL, FACW, OR FAC:			25%	(A/B)
2.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	40	X	UPL					
3.	*ERICAMERIA NAUSEOSA*	15		UPL	PREVALENCE INDEX WORKSHEET:				
4.	*CHRYSOTHAMNUS VISCIDIFLORUS*	15		UPL					
5.					TOTAL % COVER OF:			MULTIPLY BY:	
	TOTAL COVER:	100							
					OBL SPECIES		X1=		
HERB STRATUM					FACW SPECIES	42	X2=	84	
1.	*JUNCUS BALTICUS*	42	X	FACW+	FAC SPECIES		X3=		
2.	*KOELERIA MACRANTHA*	6		NL	FACU SPECIES	24	X4=	96	
3.	*ANTENNARIA MICROPHYLLA*	24	X	NL	UPL SPECIES	100	X5=	500	
4.	*POA SECUNDA*	6		FACU	COLUMN TOTALS:	166	(A)	680	(B)

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5.	*THERMOPSIS RHOMBIFOLIA*	18		FACU	PREVALENCE INDEX = B/A =	4.10
6.	*ERIOGORUM UMBELLATUM*	4		NL		
7.					HYDROPHYTIC VEGETATION INDICATORS	
8.						
9.					DOMINANCE TEST IS > 50%	
10.					PREVALENCE INDEX IS ≤ 3.0[1]	
	TOTAL COVER:	100			MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)	
WOODY VINE STRATUM					PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)	
1.						
2.					[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT	
3.					HYDROPHYTIC VEGETATION PRESENT?	YES: ; NO: X
	TOTAL COVER:					
% BARE GROUND IN HERB STRATUM	17	% COVER OF BIOTIC CRUST				

REMARKS:

US ARMY CORPS OF ENGINEERS — ARID WEST-VERSION 11-1-06

SOIL — Sampling Point 14

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH (INCHES)	MATRIX COLOR (MOIST)	%	REDOX FEATURES COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-20	10YR 4/3	100					SL	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

SOILS[3]:					INDICATORS FOR PROBLEMATIC HYDRIC
	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):								
TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X	

REMARKS:

HYDROLOGY

WETLAND HYDROLOGY INDICATORS:						SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)							WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)				SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)				DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)				DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)				DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)				THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)				CRAYFISH BURROWS (C8)
	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)				SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)				SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)						FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	YES		NO		DEPTH (INCHES):								
WATER TABLE PRESENT?	YES		NO		DEPTH (INCHES):								
SATURATION PRESENT?	YES		NO		DEPTH (INCHES):			WETLAND HYDROLOGY PRESENT?	YES		NO	X	
(INCLUDES CAPILLARY FRINGE)													

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS — ARID WEST-VERSION 11-1-06

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	15
INVESTIGATOR(S):	LYNN MOORE AND JONATHON SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 16, T26N R92W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	TERRACE SLOPE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONVEX	SLOPE (%):	0-5
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	267577.06	LONG:	4678832.71
DATUM:	NAD 1983, UTM ZONE 13				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)						
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO		
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X		
WETLAND HYDROLOGY PRESENT	YES		NO	X								

REMARKS:
UPLAND POINT AT CROSS SECTION FOR WAYPOINT 37.

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:			
1.					NUMBER OF DOMINANT SPECIES			
2.					THAT ARE OBL, FACW, OR FAC:	0	(A)	
3.								
4.					TOTAL NUMBER OF DOMINANT			
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:	5	(B)	
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES			
1.	*ARTEMISIA TRIDENTATA*	50	X	UPL	THAT ARE OBL, FACW, OR FAC:	0	(A/B)	
2.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	25	X	UPL				
3.	*CHRYSOTHAMNUS VISCIDIFLORUS*	25	X	UPL	PREVALENCE INDEX WORKSHEET:			
4.								
5.					TOTAL % COVER OF:		MULTIPLY BY:	
	TOTAL COVER:	100						
					OBL SPECIES		X1=	
HERB STRATUM					FACW SPECIES	27	X2=	54
1.	*POA SECUNDA*	41	X	FACU	FAC SPECIES		X3=	
2.	*ELYMUS SMITHII*	27	X	FACU	FACU SPECIES	48	X4=	192
3.	*JUNCUS BALTICUS*	7		FACW	UPL SPECIES	121	X5=	605
4.	*ERIOGORUM UMBELLATUM*	4		NL	COLUMN TOTALS:	196	(A)	246 (B)
5.	*ANTENNARIA MICROPHYLLA*	7		UPL	PREVALENCE INDEX =	4.34		

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						B/A =			
6.	*NASSELLA VIRIDULA*	7			UPL				
7.	*PHLOX HOODII*	7			UPL	HYDROPHYTIC VEGETATION INDICATORS			
8.									
9.							DOMINANCE TEST IS > 50%		
10.							PREVALENCE INDEX IS ≤ 3.0[1]		
	TOTAL COVER:	100					MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)		
WOODY VINE STRATUM							PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)		
1.									
2.						[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT			
3.						HYDROPHYTIC			
	TOTAL COVER:					VEGETATION			
						PRESENT?	YES		NO X
% BARE GROUND IN HERB STRATUM		% COVER OF BIOTIC CRUST							
REMARKS:									
US ARMY CORPS OF ENGINEERS									ARID WEST-VERSION 11-1-06

SOIL

Sampling Point 15

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-20	10R 5/3	100					LS	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.) INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):									
TYPE:									
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X		

REMARKS:

HYDROLOGY

WETLAND HYDROLOGY INDICATORS:								SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)									WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)						SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)						DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)						DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)						DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)						THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)						CRAYFISH BURROWS (C8)
	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)						SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)						SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)								FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:														
SURFACE WATER PRESENT?	YES		NO		DEPTH (INCHES):									
WATER TABLE PRESENT?	YES		NO		DEPTH (INCHES):									
SATURATION PRESENT?	YES		NO		DEPTH (INCHES):			WETLAND HYDROLOGY PRESENT?	YES		NO	X		
(INCLUDES CAPILLARY FRINGE)														

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS — ARID WEST-VERSION 11-1-06

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	16
INVESTIGATOR(S):	LYNN MOORE AND JONATHON SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 16, T26N R92W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	TERRACE SLOPE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONVEX	SLOPE (%):	0-3%
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	267577.51	LONG:	4678817.31
DATUM:	NAD 1983, UTM ZONE 13				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?						YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)	
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?			YES	X	NO
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X		
WETLAND HYDROLOGY PRESENT	YES		NO	X								
REMARKS: R2 P17												

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:			
1.					NUMBER OF DOMINANT SPECIES			
2.					THAT ARE OBL, FACW, OR FAC:	0	(A)	
3.								
4.					TOTAL NUMBER OF DOMINANT			
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:	5	(B)	
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES			
1.	*ARTEMISIA TRIDENTATA*	65	X	UPL	THAT ARE OBL, FACW, OR FAC:	0	(A/B)	
2.	*CHRYSOTHAMNUS VISCIDIFLORUS*	35	X	UPL				
3.					PREVALENCE INDEX WORKSHEET:			
4.								
5.					TOTAL % COVER OF:	MULTIPLY BY:		
	TOTAL COVER:	100						
					OBL SPECIES	X1=		
HERB STRATUM					FACW SPECIES	X2=		
1.	*POA SECUNDA*	33	X	FACU	FAC SPECIES	X3=		
2.	*ANTENNARIA MICROPHYLLA*	22	X	UPL	FACU SPECIES 33	X4=	132	
3.	*NASSELLA VIRIDULA*	12		UPL	UPL SPECIES 134	X5=	670	
4.	*GAYOPHYTUM DIFFUSUM*	33	X	NI	COLUMN TOTALS: 167	(A)	802	(B)
5.					PREVALENCE INDEX =	4.80		

										B/A =					
6.															
7.										HYDROPHYTIC VEGETATION INDICATORS					
8.															
9.											DOMINANCE TEST IS > 50%				
10.											PREVALENCE INDEX IS ≤ 3.0[1]				
	TOTAL COVER:		100								MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING				
											DATA IN REMARKS OR ON A SEPARATE SHEET)				
WOODY VINE STRATUM											PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)				
1.															
2.										[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT					
3.										HYDROPHYTIC					
	TOTAL COVER:									VEGETATION					
										PRESENT?	YES		NO	X	
% BARE GROUND IN HERB STRATUM		10	% COVER OF BIOTIC CRUST												
REMARKS:															
US ARMY CORPS OF ENGINEERS										ARID WEST-VERSION 11-1-06					

SOIL Sampling Point 16

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-20	10YR 4/3	100					LS	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

					INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:
	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):								
TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X	

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:								SECONDARY INDICATORS (2 OR MORE REQUIRED)
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)								**WATER MARKS (B1) (RIVERINE)**
	SURFACE WATER (A1)		**SALT CRUSTS (B11)**					**SEDIMENT DEPOSITS (B2) (RIVERINE)**
	HIGH WATER TABLE (A2)		**BIOTIC CRUST (B12)**					**DRIFT DEPOSITS (B3) (RIVERINE)**
	SATURATION (A3)		**AQUATIC INVERTEBRATES (B13)**					**DRAINAGE PATTERNS (B10)**
	WATER MARKS (B1) (NONRIVERINE)		**HYDROGEN SULFIDE ODER (C1)**					**DRY-SEASON WATER TABLE (C2)**
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		**OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)**					**THIN MUCK SURFACE (C7)**
	DRIFT DEPOSITS (B3) (NONRIVERINE)		**PRESENCE OF REDUCED IRON (C4)**					**CRAYFISH BURROWS (C8)**
	SURFACE SOIL CRACKS (B6)		**RECENT IRON REDUCTION IN PLOWED SOIL (C6)**					**SATURATION VISIBLE ON AERIAL IMAGERY (C9)**
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		**OTHER (EXPLAIN IN REMARK)**					**SHALLOW AQUITARD (D3)**
	WATER STAINED LEAVES (B9)							**FAC-NEUTRAL TEST (D5)**

FIELD OBSERVATIONS:														
SURFACE WATER PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**									
WATER TABLE PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**									
SATURATION PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**			WETLAND HYDROLOGY PRESENT?	**YES**		**NO**	**X**		
(INCLUDES CAPILLARY FRINGE)														

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS **ARID WEST-VERSION 11-1-06**

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	17
INVESTIGATOR(S):	LYNN MOORE AND JONATHON SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 10, T26N R92W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	EPHEMERAL WASH	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	1-2%
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	269164.38	LONG:	4679950.23
DATUM:	NAD 1983, UTM ZONE 13				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)						
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO		
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND					
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X	
WETLAND HYDROLOGY PRESENT	YES		NO	X							
REMARKS: R2 P18											

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS
1.				
2.				
3.				
4.				
	TOTAL COVER:			
SAPLING/SHRUB STRATUM				
1.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	89	X	UPL
2.	*CHRYSOTHAMNUS VISCIDIFLORUS*	11		UPL
3.				
4.				
5.				
	TOTAL COVER:	100		
HERB STRATUM				
1.	*ELYMUS ELYMOIDES*	15		FACU
2.	*JUNCUS BALTICUS*	30	X	FACW
3.	*POA SECUNDA*	50	X	FACU
4.	*CIRSIUM SP.*	5		FACU
5.				

DOMINANCE TEST WORKSHEET:				
NUMBER OF DOMINANT SPECIES				
THAT ARE OBL, FACW, OR FAC:	1	(A)		
TOTAL NUMBER OF DOMINANT				
SPECIES ACROSS ALL STRATA:	3	(B)		
PERCENT OF DOMINANT SPECIES				
THAT ARE OBL, FACW, OR FAC:	33.33	(A/B)		
PREVALENCE INDEX WORKSHEET:				
TOTAL % COVER OF:	MULTIPLY BY:			
OBL SPECIES		X1=		
FACW SPECIES	30	X2=	60	
FAC SPECIES		X3=		
FACU SPECIES	70	X4=	280	
UPL SPECIES	100	X5=	500	
COLUMN TOTALS:	200	(A)	836	(B)
PREVALENCE INDEX =	4.18			

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							B/A =			
6.										
7.							HYDROPHYTIC VEGETATION INDICATORS			
8.										
9.								DOMINANCE TEST IS > 50%		
10.								PREVALENCE INDEX IS ≤ 3.0[1]		
	TOTAL COVER:	100						MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)		
WOODY VINE STRATUM								PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)		
1.										
2.							[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT			
3.							HYDROPHYTIC			
	TOTAL COVER:						VEGETATION			
							PRESENT?	YES	NO	X
% BARE GROUND IN HERB STRATUM		% COVER OF BIOTIC CRUST								
REMARKS:										
US ARMY CORPS OF ENGINEERS										ARID WEST-VERSION 11-1-06

SOIL

Sampling Point 17

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-20	10YR 5/4	100					LS	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

					INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:
	HISTOSOL (A1)		SANDY REDOX (S5)	X	1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
X	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):									
TYPE:									
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X		

REMARKS:
ISOLATED MUCK, NOT COMPLETE COVER SO CANNOT JUSTIFY HYDRIC SOILS

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:						SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)							WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)				SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)				DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)				DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)				DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)				THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)				CRAYFISH BURROWS (C8)
X	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)				SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)				SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)						FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	YES		NO		DEPTH (INCHES):								
WATER TABLE PRESENT?	YES		NO		DEPTH (INCHES):								
SATURATION PRESENT?	YES		NO		DEPTH (INCHES):		WETLAND HYDROLOGY PRESENT?	YES		NO	X		
(INCLUDES CAPILLARY FRINGE)													

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:
ISOLATED SURFACE CRACKS AND DRIFT DEPOSITS (SAGE BARK), BUT NOT EXTENSIVE AMOUNTS OF EITHER.

US ARMY CORPS OF ENGINEERS — ARID WEST-VERSION 11-1-06

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	18
INVESTIGATOR(S):	LYNN MOORE AND JONATHON SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 11, T26N R92W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	5-10
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	270285.14	LONG:	4679934.38
DATUM:	NAD 1983, UTM ZONE 13				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?						YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)	
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?			YES	X	NO
ARE VEGETATION		, SOIL		, OR HYDROLOGY .		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND					
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X	
WETLAND HYDROLOGY PRESENT	YES		NO	X							
REMARKS:											

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS
1.				
2.				
3.				
4.				
	TOTAL COVER:			
SAPLING/SHRUB STRATUM				
1.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	58	X	UPL
2.	*CHRYSOTHAMNUS VISCIDIFLORUS*	42	X	UPL
3.				
4.				
5.				
	TOTAL COVER:	100		
HERB STRATUM				
1.	*POA SECUNDA*	47	X	FACU
2.	*ANTENNARIA MICROPHYLLA*	18		UPL
3.	*THERMOPSIS RHOMBIFOLIA*	5		FACU
4.	*ERIOGORUM UMBELLATUM*	5		NL
5.	*ALLYSUM DESERTORUM*	5		UPL

DOMINANCE TEST WORKSHEET:				
NUMBER OF DOMINANT SPECIES THAT ARE OBL, FACW, OR FAC:			0	(A)
TOTAL NUMBER OF DOMINANT SPECIES ACROSS ALL STRATA:			4	(B)
PERCENT OF DOMINANT SPECIES THAT ARE OBL, FACW, OR FAC:			0	(A/B)
PREVALENCE INDEX WORKSHEET:				
TOTAL % COVER OF:			MULTIPLY BY:	
OBL SPECIES		X1=		
FACW SPECIES		X2=		
FAC SPECIES		X3=		
FACU SPECIES	72	X4=	288	
UPL SPECIES	123	X5=	615	
COLUMN TOTALS:	195	(A)	903	(B)
PREVALENCE INDEX =		4.63		

						B/A =				
6.	*ELYMUS SMITHII*	20	X	FACU						
7.						HYDROPHYTIC VEGETATION INDICATORS				
8.										
9.							DOMINANCE TEST IS > 50%			
10.							PREVALENCE INDEX IS ≤ 3.0[1]			
	TOTAL COVER:	100					MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)			
WOODY VINE STRATUM							PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)			
1.										
2.						[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT				
3.						HYDROPHYTIC				
	TOTAL COVER:					VEGETATION				
						PRESENT?	YES		NO	X
% BARE GROUND IN HERB STRATUM	15	% COVER OF BIOTIC CRUST								
REMARKS:										
US ARMY CORPS OF ENGINEERS						ARID WEST-VERSION 11-1-06				

SOIL — Sampling Point 18

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH (INCHES)	MATRIX COLOR (MOIST)	%	REDOX FEATURES COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-20	10YR 4/4	100					S	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

RESTRICTIVE LAYER (IF PRESENT):								
TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X	

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:						SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)							**WATER MARKS (B1)** (RIVERINE)
	SURFACE WATER (A1)		**SALT CRUSTS (B11)**				**SEDIMENT DEPOSITS (B2)** (RIVERINE)
	HIGH WATER TABLE (A2)		**BIOTIC CRUST (B12)**				**DRIFT DEPOSITS (B3)** (RIVERINE)
	SATURATION (A3)		**AQUATIC INVERTEBRATES (B13)**				**DRAINAGE PATTERNS (B10)**
	WATER MARKS (B1) (NONRIVERINE)		**HYDROGEN SULFIDE ODER (C1)**				**DRY-SEASON WATER TABLE (C2)**
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		**OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)**				**THIN MUCK SURFACE (C7)**
	DRIFT DEPOSITS (B3) (NONRIVERINE)		**PRESENCE OF REDUCED IRON (C4)**				**CRAYFISH BURROWS (C8)**
	SURFACE SOIL CRACKS (B6)		**RECENT IRON REDUCTION IN PLOWED SOIL (C6)**				**SATURATION VISIBLE ON AERIAL IMAGERY (C9)**
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		**OTHER (EXPLAIN IN REMARK)**				**SHALLOW AQUITARD (D3)**
	WATER STAINED LEAVES (B9)						**FAC-NEUTRAL TEST (D5)**

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**								
WATER TABLE PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**								
SATURATION PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**		WETLAND HYDROLOGY PRESENT?	**YES**		**NO**	**X**		
(INCLUDES CAPILLARY FRINGE)													

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS **ARID WEST-VERSION 11-1-06**

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	19
INVESTIGATOR(S):	LYNN MOORE AND JONATHON SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 11, T26N R92W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	EPHEMERAL DRAINAGE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONCAVE	SLOPE (%):	0-2
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	270517.3	LONG:	4680775.25
DATUM:	NAD 1983, UTM ZONE 13				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)						
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO		
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND					
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X	
WETLAND HYDROLOGY PRESENT	YES		NO	X							
REMARKS: R2 P19-20											

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS
1.				
2.				
3.				
4.				
	TOTAL COVER:			
SAPLING/SHRUB STRATUM				
1.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	100	X	UPL
2.				
3.				
4.				
5.				
	TOTAL COVER:	100		
HERB STRATUM				
1.	*POA SECUNDA*	49	X	FACU
2.	*HESPEROSTIPA COMATA*	3		NL
3.	*THERMOPSIS RHOMBIFOLIA*	29	X	FACU
4.	*DANTHONIA UNISPICATA*	19		NL
5.				

DOMINANCE TEST WORKSHEET:				
NUMBER OF DOMINANT SPECIES				
THAT ARE OBL, FACW, OR FAC:		0	(A)	
TOTAL NUMBER OF DOMINANT				
SPECIES ACROSS ALL STRATA:		3	(B)	
PERCENT OF DOMINANT SPECIES				
THAT ARE OBL, FACW, OR FAC:		0	(A/B)	
PREVALENCE INDEX WORKSHEET:				
TOTAL % COVER OF:		MULTIPLY BY:		
OBL SPECIES		X1=		
FACW SPECIES		X2=		
FAC SPECIES		X3=		
FACU SPECIES	78	X4=	312	
UPL SPECIES	100	X5=	500	
COLUMN TOTALS:	178	(A)	812	(B)
PREVALENCE INDEX = B/A =		4.56		

6.															
7.										HYDROPHYTIC VEGETATION INDICATORS					
8.															
9.										DOMINANCE TEST IS > 50%					
10.										PREVALENCE INDEX IS ≤ 3.0[1]					
	TOTAL COVER:		100							MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING					
										DATA IN REMARKS OR ON A SEPARATE SHEET)					
WOODY VINE STRATUM										PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)					
1.															
2.										[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT					
3.										HYDROPHYTIC					
	TOTAL COVER:									VEGETATION					
										PRESENT?	YES		NO	X	
% BARE GROUND IN HERB STRATUM		25	% COVER OF BIOTIC CRUST												
REMARKS:															
US ARMY CORPS OF ENGINEERS										ARID WEST-VERSION 11-1-06					

SOIL Sampling Point 19

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					TEXTURE	REMARKS
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]			
0-20	10YR 4/4	100						LS	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

						INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:
	HISTOSOL (A1)		SANDY REDOX (S5)			1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)			2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)			REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)			RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)			OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)			
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)			
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)			
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)			
	SANDY GLEYED MATRIX (S4)					[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):									
TYPE:									
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X		

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:							SECONDARY INDICATORS (2 OR MORE REQUIRED)
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)							WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)				SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)				DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)				DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)				DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)				THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)				CRAYFISH BURROWS (C8)
	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)				SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)				SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)						FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	YES		NO		DEPTH (INCHES):								
WATER TABLE PRESENT?	YES		NO		DEPTH (INCHES):								
SATURATION PRESENT?	YES		NO		DEPTH (INCHES):			WETLAND HYDROLOGY PRESENT?	YES		NO	X	
(INCLUDES CAPILLARY FRINGE)													

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:
REMARKS:
US ARMY CORPS OF ENGINEERS — ARID WEST-VERSION 11-1-06

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	20
INVESTIGATOR(S):	LYNN MOORE AND JONATHON SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 11, T26N R92W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	HILLSIDE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONVEX	SLOPE (%):	12
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	270506.83	LONG:	4680766.03
DATUM:	NAD 1983, UTM ZONE 13				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?	YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)						
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?	YES	X	NO		
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND					
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X	
WETLAND HYDROLOGY PRESENT	YES		NO	X							
REMARKS: R2 P21											

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS	DOMINANCE TEST WORKSHEET:			
1.					NUMBER OF DOMINANT SPECIES			
2.					THAT ARE OBL, FACW, OR FAC:	0	(A)	
3.								
4.					TOTAL NUMBER OF DOMINANT			
	TOTAL COVER:				SPECIES ACROSS ALL STRATA:	5	(B)	
SAPLING/SHRUB STRATUM					PERCENT OF DOMINANT SPECIES			
1.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	76	X	UPL	THAT ARE OBL, FACW, OR FAC:	0	(A/B)	
2.	*CHRYSOTHAMNUS VISCIDIFLORUS*	24	X	UPL				
3.					PREVALENCE INDEX WORKSHEET:			
4.								
5.					TOTAL % COVER OF:	MULTIPLY BY:		
	TOTAL COVER:	100						

					OBL SPECIES		X1=		
HERB STRATUM					FACW SPECIES		X2=		
1.	*POA SECUNDA*	25	X	FACU	FAC SPECIES		X3=		
2.	*ANTENNARIA MICROPHYLLA*	5		UPL	FACU SPECIES	84	X4=	336	
3.	*THERMOPSIS RHOMBIFOLIA*	10		FACU	UPL SPECIES	113	X5=	565	
4.	*ERIOGORUM UMBELLATUM*	20	X	NL	COLUMN TOTALS:	197	(A)	901	(B)
5.	*HESPEROSTIPA COMATA*	3		NL	PREVALENCE INDEX =		4.57		

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							B/A =		
6.	*ELYMUS SMITHII*	29	X	FACU					
7.	*PHLOX* SP.	4		UPL		HYDROPHYTIC VEGETATION INDICATORS			
8.	*LINANTHUS PUNGENS*	4		UPL					
9.							DOMINANCE TEST IS > 50%		
10.							PREVALENCE INDEX IS ≤ 3.0[1]		
	TOTAL COVER:	100					MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING DATA IN REMARKS OR ON A SEPARATE SHEET)		
WOODY VINE STRATUM							PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)		
1.									
2.						[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT			
3.						HYDROPHYTIC			
	TOTAL COVER:					VEGETATION			
						PRESENT?	YES	NO	X
% BARE GROUND IN HERB STRATUM	20	% COVER OF BIOTIC CRUST							
REMARKS:									
US ARMY CORPS OF ENGINEERS								ARID WEST-VERSION 11-1-06	

SOIL

Sampling Point 20

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES					
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-20	10YR 4/3	100					LS	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.)

SOILS[3]:					INDICATORS FOR PROBLEMATIC HYDRIC
	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):								
TYPE:								
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X	

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:						SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)							WATER MARKS (B1) (RIVERINE)
	SURFACE WATER (A1)		SALT CRUSTS (B11)				SEDIMENT DEPOSITS (B2) (RIVERINE)
	HIGH WATER TABLE (A2)		BIOTIC CRUST (B12)				DRIFT DEPOSITS (B3) (RIVERINE)
	SATURATION (A3)		AQUATIC INVERTEBRATES (B13)				DRAINAGE PATTERNS (B10)
	WATER MARKS (B1) (NONRIVERINE)		HYDROGEN SULFIDE ODER (C1)				DRY-SEASON WATER TABLE (C2)
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)				THIN MUCK SURFACE (C7)
	DRIFT DEPOSITS (B3) (NONRIVERINE)		PRESENCE OF REDUCED IRON (C4)				CRAYFISH BURROWS (C8)
	SURFACE SOIL CRACKS (B6)		RECENT IRON REDUCTION IN PLOWED SOIL (C6)				SATURATION VISIBLE ON AERIAL IMAGERY (C9)
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		OTHER (EXPLAIN IN REMARK)				SHALLOW AQUITARD (D3)
	WATER STAINED LEAVES (B9)						FAC-NEUTRAL TEST (D5)

FIELD OBSERVATIONS:													
SURFACE WATER PRESENT?	YES		NO		DEPTH (INCHES):								
WATER TABLE PRESENT?	YES		NO		DEPTH (INCHES):								
SATURATION PRESENT?	YES		NO		DEPTH (INCHES):			WETLAND HYDROLOGY PRESENT?	YES		NO	X	
(INCLUDES CAPILLARY FRINGE)													

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS — ARID WEST-VERSION 11-1-06

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WETLAND DETERMINATION DATA FORM-Arid West Region

PROJECT/SITE:	GREAT DIVIDE - ANTELOPE	CITY/COUNTY:	SWEETWATER COUNTY	SAMPLING DATE:	6-27-07
APPLICANT/OWNER:	ENERGY METALS	STATE:	WYOMING	SAMPLING POINT:	21
INVESTIGATOR(S):	LYNN MOORE AND JONATHON SOWDER	SECTION, TOWNSHIP, RANGE:	SEC. 11, T26N R92W		
LANDFORM (HILLSLOPE, TERRACE, ETC.)	HILLSIDE	LOCAL RELIEF (CONCAVE, CONVEX, NONE):	CONVEX	SLOPE (%):	8-10
SUBREGION (LRP):	INTERIOR DESERTS	LAT:	270524.46	LONG:	4680790.89
DATUM:	NAD 1983, UTM ZONE 13				
SOIL MAP UNIT NAME:		NWI CLASSIFICATION:			

ARE CLIMATIC/HYDROLOGIC CONDITIONS ON THE SITE TYPICAL FOR THIS TIME OF YEAR?					YES	X	NO		(IF NO, EXPLAIN IN REMARKS.)		
ARE VEGETATION		, SOIL		, OR HYDROLOGY		SIGNIFICANTLY DISTURBED? ARE "NORMAL CIRCUMSTANCES" PRESENT?		YES	X	NO	
ARE VEGETATION		, SOIL		, OR HYDROLOGY		NATURALLY PROBLEMATIC? (IF NEEDED, EXPLAIN ANY ANSWERS IN REMARKS.)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

HYDROPHYTIC VEGETATION PRESENT?	YES		NO	X		IS THE SAMPLED AREA WITHIN A WETLAND						
HYDRIC SOIL PRESENT?	YES		NO	X			YES		NO	X		
WETLAND HYDROLOGY PRESENT	YES		NO	X								
REMARKS: R2 P22												

VEGETATION

TREE STRATUM (USE SCIENTIFIC NAMES)		ABSOLUTE % COVER	DOMINANT SPECIES?	INDICATOR STATUS
1.				
2.				
3.				
4.				
	TOTAL COVER:			
SAPLING/SHRUB STRATUM				
1.	*ARTEMISIA TRIDENTATA* NUTT. SSP. *WYOMINGENSIS*	75	X	UPL
2.	*CHRYSOTHAMNUS VISCIDIFLORUS*	25	X	UPL
3.				
4.				
5.				
	TOTAL COVER:	100		
HERB STRATUM				
1.	*POA SECUNDA*	22	X	FACU
2.	*PHLOX HOODII*	15		UPL
3.	*POA CUSICKII*	10		NL
4.	*ELYMUS SMITHII*	53	X	FACU
5.				

DOMINANCE TEST WORKSHEET:				
NUMBER OF DOMINANT SPECIES				
THAT ARE OBL, FACW, OR FAC:		0	(A)	
TOTAL NUMBER OF DOMINANT				
SPECIES ACROSS ALL STRATA:		4	(B)	
PERCENT OF DOMINANT SPECIES				
THAT ARE OBL, FACW, OR FAC:		0	(A/B)	
PREVALENCE INDEX WORKSHEET:				
TOTAL % COVER OF:		MULTIPLY BY:		
OBL SPECIES		X1=		
FACW SPECIES		X2=		
FAC SPECIES		X3=		
FACU SPECIES	75	X4=	300	
UPL SPECIES	115	X5=	575	
COLUMN TOTALS:	190	(A)	875	(B)
PREVALENCE INDEX =		4.61		

										B/A =					
6.															
7.										HYDROPHYTIC VEGETATION INDICATORS					
8.															
9.											DOMINANCE TEST IS > 50%				
10.											PREVALENCE INDEX IS ≤ 3.0[1]				
	TOTAL COVER:		100								MORPHOLOGICAL ADAPTATIONS[1] (PROVIDING SUPPORTING				
											DATA IN REMARKS OR ON A SEPARATE SHEET)				
WOODY VINE STRATUM											PROBLEMATIC HYDROPHYTIC VEGETATION (EXPLAIN)				
1.															
2.										[1]INDICATORS OF HYDRIC SOILS AND WETLAND HYDROLOGY MUST BE PRESENT					
3.										HYDROPHYTIC					
	TOTAL COVER:									VEGETATION					
										PRESENT?	YES		NO	X	
% BARE GROUND IN HERB STRATUM		20	% COVER OF BIOTIC CRUST												
REMARKS:															
US ARMY CORPS OF ENGINEERS										ARID WEST-VERSION 11-1-06					

SOIL

Sampling Point 21

PROFILE DESCRIPTION: (DESCRIBE TO THE DEPTH NEEDED TO DOCUMENT THE INDICATOR OR CONFIRM THE ABSENCE OF INDICATORS.)

DEPTH	MATRIX		REDOX FEATURES							
(INCHES)	COLOR (MOIST)	%	COLOR (MOIST)	%	TYPE[1]	LOC[2]	TEXTURE	REMARKS
0-20	10YR 4/4	100					LS	

[1]TYPE: C=CONCENTRATION, D=DEPLETION, RM=REDUCED MATRIX. [2]LOCATION: PL=PORE LINING, RC=ROOT CHANNEL, M=MATRIX.

HYDRIC SOIL INDICATORS: (APPLICABLE TO ALL LRRS, UNLESS OTHERWISE NOTED.) INDICATORS FOR PROBLEMATIC HYDRIC SOILS[3]:

	HISTOSOL (A1)		SANDY REDOX (S5)		1 CM MUCK (A9) (LRR C)
	HISTIC EPIPEDON (A2)		STRIPPED MATRIX (S6)		2 CM MUCK (A10) (LRR B)
	BLACK HISTIC (A3)		LOAMY MUCKY MINERAL (F1)		REDUCED VERTIC (F18)
	HYDROGEN SULFIDE (A4)		LOAMY GLEYED MATRIX (F2)		RED PARENT MATERIAL (TF2)
	STRATIFIED LAYERS (A5) (LRR C)		DEPLETED MATRIX (F3)		OTHER (EXPLAIN IN REMARKS)
	1 CM MUCK (A9) (LRR D)		REDOX DARK SURFACE (F6)		
	DEPLETED BELOW DARK SURFACE (A11)		DEPLETED DARK SURFACE (F7)		
	THICK DARK SURFACE (A12)		REDOX DEPRESSIONS (F8)		
	SANDY MUCKY MINERAL (S1)		VERNAL POOLS (F9)		
	SANDY GLEYED MATRIX (S4)				[3]INDICATORS OF HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY MUST BE PRESENT.

RESTRICTIVE LAYER (IF PRESENT):									
TYPE:									
DEPTH (INCHES):			HYDRIC SOILS PRESENT?	YES		NO	X		

REMARKS:

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HYDROLOGY

WETLAND HYDROLOGY INDICATORS:								SECONDARY INDICATORS (2 OR MORE REQUIRED)	
PRIMARY INDICATORS (ANY ONE INDICATOR IS SUFFICIENT)									**WATER MARKS (B1)** (RIVERINE)
	SURFACE WATER (A1)		**SALT CRUSTS (B11)**						**SEDIMENT DEPOSITS (B2)** (RIVERINE)
	HIGH WATER TABLE (A2)		**BIOTIC CRUST (B12)**						**DRIFT DEPOSITS (B3)** (RIVERINE)
	SATURATION (A3)		**AQUATIC INVERTEBRATES (B13)**						**DRAINAGE PATTERNS (B10)**
	WATER MARKS (B1) (NONRIVERINE)		**HYDROGEN SULFIDE ODER (C1)**						**DRY-SEASON WATER TABLE (C2)**
	SEDIMENT DEPOSITS (B2) (NONRIVERINE)		**OXIDIZED RHIZOSPHERES ALONG LIVING ROOTS (C3)**						**THIN MUCK SURFACE (C7)**
	DRIFT DEPOSITS (B3) (NONRIVERINE)		**PRESENCE OF REDUCED IRON (C4)**						**CRAYFISH BURROWS (C8)**
	SURFACE SOIL CRACKS (B6)		**RECENT IRON REDUCTION IN PLOWED SOIL (C6)**						**SATURATION VISIBLE ON AERIAL IMAGERY (C9)**
	INUNDATION VISIBLE ON AERIAL IMAGERY (B7)		**OTHER (EXPLAIN IN REMARK)**						**SHALLOW AQUITARD (D3)**
	WATER STAINED LEAVES (B9)								**FAC-NEUTRAL TEST (D5)**

FIELD OBSERVATIONS:														
SURFACE WATER PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**									
WATER TABLE PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**									
SATURATION PRESENT?	**YES**		**NO**		**DEPTH (INCHES):**			WETLAND HYDROLOGY PRESENT?	**YES**		**NO**	X		
(INCLUDES CAPILLARY FRINGE)														

DESCRIBE RECORDED DATA (STREAM GAUGE, MONITORING WELL, AERIAL PHOTOS, PREVIOUS INSPECTION), IF AVAILABLE:

REMARKS:

US ARMY CORPS OF ENGINEERS **ARID WEST-VERSION 11-1-06**

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ADDENDUM 3.5-K

PEAK COUNTS OF GREATER SAGE GROUSE AT LEKS IN THE ANTELOPE AND JAB URANIUM PROJECT SURVEY AREA

Addendum 3.5-K. Peak Counts of Greater Sage-Grouse at Leks in the Antelope and JAB Uranium Project Survey Area

Lek	UTM Zone/Easting/ Northing	Legal Description ¼ ¼ Section/ Township/Range	2007		2008[1]	
			Males	Females	Males	Females
ANTELOPE SURVEY AREA						
Upper Osbourne	13_ 273255/ 4677850	SESE 16/26/92	78	5	62	2
Harrier[2]	13_ 264603/ 4677932	NWNW 20/26/92	91	7	56	6
A-1	13_ 268594/ 4683465	SENW 34/27/92	125	13	Inaccessible: Confirmed active later via sign	
Sand Gully	13_ 262613/ 4673808	NESE 36/26/93	68	4	77	9
Prospects	13_ 267813/ 4673189	SWSW 34/26/93	88	9	66	11
JAB SURVEY AREA						
Arapahoe[2]	12_ 747320/ 4679366	SENW 13/26/94	98	4	85	9

[1] Persistent inclement weather in 2008: three checks in License/Permit areas, two checks at most perimeter leks.
[2] Lek is inside the License/Permit Area itself.

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Incidental Sage-Grouse Sightings in the Antelope Survey Area: 2007

Date	#	Sex	Age	UTM Location (NAD 83) Zone/Easting/Northing	Legal Description Township/Range/Section	Habitat[1]
Observations Inside License/Permit Area						
4-9-07	4	F	A	13_271714/4680096	26/92 NESW Sec 12	Artr
*5-3-07	7	F	A	13_259125/4681326	26/92 NENE Sec 15	Artr
7-28-07	5	F	A	13_267843/4678043	26/92 SWSW Sec 15	Artr
7-29-07	7	F	A	13_268158/4678124	26/92 SWSW Sec 15	Artr
Observations In Two-mile Survey Perimeter						
4-8-07	2	F	A	13_274783/4679787	26/91/NESW Sec 8	Artr
4-9-07	3	F	A	13_272781/4681386	26/91/SWSW Sec 16	Artr
4-9-07	3	F	A	13_261194/4674567	26/92 NENE Sec 35	Artr
4-10-07	13	F	A	13_261989/4676427	26/92 NWNW Sec 25	Arsp
4-10-07	9	F	A	13_266891/4683914	26/92 SESE Sec 8	Artr
4-10-07	4	F	A	13_270779/4677983	26/92 SESE Sec 14	Artr
4-13-07	9	F	A	13-263921/4682594	26/92 NENW Sec 6	Arsp
4-23-07	4	F	A	13_265883/4674620	26/92 NENE Sec 32	Artr
7-29-07	4	F	A	13-269997/4678673	26/92 SESW Sec 14	Artr

Incidental Sage-Grouse Sightings in the JAB Survey Area: 2007

Date	#	Sex	Age	UTM Location (NAD 83) Zone/Easting/Northing	Legal Description Township/Range/Section	Habitat[1]
Observations Inside License/Permit Area						
4-9-07	4	F	A	13_271714/4680096	26/92 NESW Sec 12	Artr
*5-3-07	7	F	A	13_259125/4681326	26/92 NENE Sec 15	Artr
7-28-07	5	F	A	13_267843/4678043	26/92 SWSW Sec 15	Artr
7-29-07	7	F	A	13_268158/4678124	26/92 SWSW Sec 15	Artr
Observations In Two-mile Survey Perimeter						
4-8-07	2	F	A	13_274783/4679787	26/91/NESW Sec 8	Artr
4-9-07	3	F	A	13_272781/4681386	26/91/SWSW Sec 16	Artr
4-9-07	3	F	A	13_261194/4674567	26/92 NENE Sec 35	Artr
4-10-07	13	F	A	13_261989/4676427	26/92 NWNW Sec 25	Arsp
4-10-07	9	F	A	13_266891/4683914	26/92 SESE Sec 8	Artr
4-10-07	4	F	A	13_270779/4677983	26/92 SESE Sec 14	Artr
4-13-07	9	F	A	13-263921/4682594	26/92 NENW Sec 6	Arsp
4-23-07	4	F	A	13_265883/4674620	26/92 NENE Sec 32	Artr
7-29-07	4	F	A	13-269997/4678673	26/92 SESW Sec 14	Artr

Sex: F = Female, M = Male Age: A = Adult *Nesting: 4 eggs[1]
Habitats: *Artemisia tridentata (Artr)* = Wyoming Big Sage Habitat
Artemisia spinescens (Arsp) = Bud Sage Habitat

Raptor Nest UTMs (NAD 83) in the Antelope and JAB Survey Area: 2007-2008

BLM ID[1]	Species[2]	Zone	Easting	Northing	¼ ¼Section	Township	Range
JAB-1	FEHA	12	741116	4681793	SESW 5	26N	94W
JAB-2	FEHA	12	741311	4682726	NWNE 5	26N	94W
2176	FEHA	12	740634	4678376	SWSW 17	26N	94W
2177	FEHA	12	740772	4678362	SWSW 17	26N	94W
2178	FEHA	12	740976	4679449	NENW 17	26N	94W
2179	FEHA	12	740948	4679484	NWNW 17	26N	94W
2180	FEHA	12	740918	4679161	SWNW 17	26N	94W
2181	FEHA	12	741520	4675535	NWSE 29	26N	94W
2182	FEHA	12	741236	4675572	NESW 29	26N	94W
2183	FEHA	12	741361	4675522	NESW 29	26N	94W

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ADDENDUM 3.5-L

BLM VERTEBRATE/TERRESTRIAL SENSITIVITY SPECIES LIST

Common Name *(scientific name)*	Habitat	Observed in License/Permit Area		Observed in 1-mile Survey Area Perimeter
		Antelope	JAB	
Mammals				
Long-eared Myotis *(Myotis evotis)*	Conifer and deciduous forest, caves and mines	No	No	No
Fringed Myotis *(Myotis thysanodes)*	Conifer forests, woodland chaparral, caves and mines	No	No	No
Spotted Bat *(Euderma maculatum)*	Cliffs over perennial water, basin-prairie shrub	No	No	No
Townsend's Big-eared Bat *(Corynorhinus townsendii)*	Forests, basin-prairie shrub, caves and mines	No	No	No
White-tailed Prairie Dog *(Cynomys leucurus)*	Basin-prairie shrub, grasslands	No	Breeder	Breeder
Black-tailed Prairie Dog *(Cynomys ludovicianus)*	Short-grass/mid-grass grasslands	No	No	No
Wyoming Pocket Gopher *(Thomomys clusius)*	Meadows with loose soil	No	No	No
Gray Wolf *(Canis lupus)*	Coniferous forests, mountain-foothills shrublands/grasslands	No	No	No
Swift Fox *(Vulpes velox)*	Grasslands	No	No	No

Grizzly Bear *(Ursos arctos)*	Coniferous forests, mountain-foothills shrublands/grasslands, riparian shrub	No	No	No
Birds				
White-faced Ibis *(Plegadis chihi)*	Marshes, wet meadows	No	No	No

Common Name ***(scientific name)***	**Habitat**	**Observed in License/Permit Area**		**Observed in 1-mile Survey Area Perimeter**
		Antelope	**JAB**	
Trumpeter Swan *(Cygnus buccinator)*	Lakes, ponds, rivers	No	No	No
Northern Goshawk *(Accipiter gentilis)*	Conifer and deciduous forests	No	No	No
Ferruginous Hawk *(Buteo regalis)*	Basin-prairie shrub, grasslands, rock outcrops	No	Non-Breeder	Common Breeder
Peregrine falcon *(Falco peregrinus)*	Tall cliffs	No	No	No
Greater Sage-grouse *(Centrocercus urophasianus)*	Basin-prairie shrub, mountain-foothill shrub	Common Breeder	Common Breeder	Common Breeder
Columbian Sharp-tailed Grouse *(Tympanuchus phasianellus columbianus)*	Grasslands	No	No	No
Long-billed Curlew *(Numenius americanus)*	Grasslands, plains, foothills, wet meadows	No	No	No
Mountain Plover *(Charadrius montanus)*	Shortgrass/midgrass grasslands, basin-prairie shrubs	No	No	Potential Breeder

Yellow-billed Cuckoo *(Coccyzus americanus)*	Open woodlands, streamside willow and alder groves	No	No	No
Burrowing Owl *(Athene cunicularia)*	Grasslands, basin-prairie shrub	No	No	No
Sage Thrasher *(Oreoscoptes montanus)*	Basin-prairie shrub, mountain-foothill shrub	Common Breeder	Common Breeder	Common Breeder
Loggerhead Shrike *(Lanius ludovicianus)*	Basin-prairie shrub, mountain-foothill shrub	Occasional Breeder	No	Occasional Breeder
Brewer's Sparrow *(Spizella breweri)*	Basin-prairie shrub	Common Breeder	No	Common Breeder

Sage Sparrow *(Amphispiza billneata)*	Basin-prairie shrub, mountain-foothill shrub	Common Breeder	Common Breeder	Common Breeder

Common Name ***(scientific name)***	**Habitat**	**Observed in License/Permit Area**		**Observed in 1-mile Survey Area Perimeter**
		Antelope	**JAB**	
Baird's Sparrow *(Ammodramus bairdii)*	Grasslands, weedy fields	No	No	No
Amphibians				
Northern Leopard Frog *(Rana pipiens)*	Beaver ponds, permanent water in plains and foothills	No	No	No
Great Basin Spadefoot *(Spea intermontana)*	Spring seeps, permanent and temporary waters	No	No	No
Boreal Toad (Northern Rocky Mountain population) *(Bufo boreas boreas)*	Pond margins, wet meadows, riparian areas	No	No	No
Spotted Frog *(Ranus pretiosa)*	Ponds, sloughs, small streams	No	No	No

[1] List for Lander and Rawlins Field Offices obtained from BLM website (September 2002) with update from BLM biologists (June 2008). No suitable habitat is present in the survey area to support any sensitive fish species.

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ADDENDUM 3.5-M

USFWS MIGRATORY BIRD SPECIES OF MANAGEMENT CONCERN

Appendix M USFWS Migratory Bird Species of Management Concern (Non-coal) for the Antelope and JAB Uranium Project

Species	Primary Nesting Habitat(s)	Occurrence in License/Permit Area[1]		Occurrence Within Survey Perimeter[2]
		Antelope	JAB	
Level I Species – Conservation Action Needed				
Mountain Plover *Charadrius montanus*	Short-grass prairie, shrub-steppe	Not observed		Observed, breeder
Trumpeter Swan *Cygnus buccinator*	Wetlands	No records		No records
Greater Sage-grouse *Centrocercus urophasianus*	Shrub-steppe	Observed, breeder		Observed, breeder
McCown's Longspur *Calcarius mccownii*	Short-grass prairie, shrub-steppe	Not observed		Not observed
Baird's Sparrow *Ammodramus bairdii*	Short-grass prairie	Not observed		Not observed
Ferruginous Hawk *Buteo regalis*	Shrub-steppe, grasslands	Observed, non-breeder		Observed, breeder
Brewer's Sparrow *Spizella breweri*	Shrub-steppe, montane shrublands	Observed, breeder		Observed, breeder
Wilson's Phalarope *Phalaropus tricolor*	Wetlands	No records		No records
Franklin's Gull *Larus pipixcan*	Wetlands	No records		No records
SAGE SPARROW *Amphispiza belli*	Shrub-steppe, montane shrublands	Observed, breeder		Observed, breeder
Swainson's Hawk *Buteo swainsoni*	Plains/Basin riparian, grasslands	Not observed		Not observed
Long-billed Curlew *Numenius americanus*	Short-grass prairie	No records		No records
Short-eared Owl *Asio flammeus*	Short-grass prairie, shrub-steppe	Not observed		Not observed
Northern Goshawk *Accipiter gentiles*	Conifer, aspen	No records		No records
Peregrine Falcon *Falco peregrinus*	Cliffs	Not observed		Not observed
Burrowing Owl *Athene cunicularia*	Grasslands, shrub-steppe	Not observed		Not observed
Forster's Tern *Sterna forsteri*	Wetlands	No records		No records

Bald Eagle *Haliaeetus leucocephalus*	Riparian	Not observed		Incidental observation
Upland Sandpiper *Bartramia longicauda*	Short-grass prairie, shrub-steppe	Not observed		Not observed
Black Tern *Chlidonias niger*	Wetlands	No records		No records
Species	**Primary Nesting Habitat(s)**	**Occurrence in License/Permit Area[1]**		**Occurrence Within Survey Perimeter[2]**
		Antelope	**JAB**	
Whooping Crane *Grus americana*	Wetlands	No records		No records
Piping Plover *Charadrius melodus*	Wetlands, aquatic	No records		No records
Level II Species – Continued Monitoring Recommended				
CALLIOPE HUMMINGBIRD Stellula calliope	Mid-elevation conifers, montane riparian	No records		No records
Lewis' Woodpecker Melanerpes lewis	Low elevation conifer, plains/basin riparian	No records		No records
Cassin's Kingbird Tyrannus vociferans	Juniper Woodland Plain/basin riparian	No records		No records
Lark Bunting Calamospiza melanocorys	Shortgrass prairie, shrub steppe	Not observed		Not observed
American White Pelican Pelecanus erythrorhynchos	Aquatic-rivers, lakes, ponds	No records		No records
William's Sapsucker Sphyrapicus thyroideus	Mid-elevation conifer	No records		No records
Black-backed Woodpecker Picoides arcticus	Mid-elevation conifer, High elevation conifer	No records		No records
Gray Flycatcher Empidonax wrightii	Juniper woodland, mountain-foothills shrub	No records		No records
Juniper Titmouse Baeolophus ridgwayi	Juniper woodlands	No records		No records
Dickcissel Spiza americana	Shortgrass prairie	No records		No records
Chestnut-collared Longspur Calcarius ornatus	Shortgrass prairie	No records		No records
Harlequin Duck Histrionicus histrionicus	Montane riparian	No records		No records
Snowy Plover Charadrius alexandrinus	Wetlands	No records		No records
Black-chinned Hummingbird Archilochus alexandri	Plains/basin riparian, shrub-steppe	No records		No records

Rufous Hummingbird *Selasphorus rufus*	Mid-elevation conifer	No records	No records
Red-naped Sapsucker Sphyrapicus nuchalis	Aspen	No records	No records
American Three-toed Woodpecker *Picoides dorsalis*	Mid-elevation conifer, high elevation conifer	No records	No records
Willow Flycatcher Empidonax traillii	Montane riparian Plains/basin riparian	No records	No records

Species	Primary Nesting Habitat(s)	Occurrence in License/Permit Area[1]		Occurrence Within Survey Perimeter[2]
		Antelope	JAB	
Hammond's Flycatcher Epidonax hammondii	Higher-elevation confer with aspen, montane riparian	No records		No records
Codilleran Flycatcher Empidonax occidentalis	Montane riparian, mid-elevation conifer	No records		No records
Pygmy Nuthatch Sitta pygmaea	Low-elevation conifer	No records		No records
Marsh Wren Cistothorus palustris	Wetlands	No records		No records
American Dipper Cinclus mexicanus	Montane riparian	No records		No records
Plumbeouos Vireo Vireo plumbeus	Mid-elevation conifer, low-elevation conifer	No records		No records
Townsend's Warbler Dendroica townsendii	High-elevation conifer, mid-elevation conifer	No records		No records
Dusky Flycatcher Empidonax oberholseri	Low-elevation conifer, aspen, mountain-foothills shrub	No records		No records
Western Bluebird Sialia Mexicana	Juniper woodlands, low-elevation conifer	No records		No records
Sage Thrasher Oreoscoptes montanus	Shrub-steppe	Observed, breeder		Observed, breeder
Grasshopper Sparrow Ammodramus savannarum	Short-grass prairie, shrub-steppe	Not observed		Not observed
Bobolink Dolichonyx oryzivorus	Short-grass prairie, shrub-steppe	Not observed		Not observed

Common Loon Gavia immer	Lakes, wetlands	No records	No records
Black-billed Cuckoo Coccyzus erythropthalmus	Plains/basin riparian	No records	No records
Red-headed Woodpecker Melanerpes erythrocephalus	Plains/basin riparian, low-elevation conifer	No records	No records
Yellow-billed Cuckoo Coccyzus americanus	Plains/basin riparian	No records	No records
Eastern Screech Owl Megascops asio	Plains/basin riparian	No records	No records
Western Screech Owl Megascops kennicottii	Plains/basin riparian	No records	No records
Great Gray Owl Strix nebulosa	Mid-elevation conifer, High-elevation conifer	No records	No records
Boreal Owl Aegolius funereus	High elevation conifer	No records	No records

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ADDENDUM 3.5-N

WILDLIFE MAPS

Energy Metals Corporation
Antelope/JAB Uranium Project
Fig 3.5-3 Antelope Wildlife Features

Datum: UTM NAD83, Zone 13N | Source: G:Gwyn\Mines\Energy Metals\Great Divide\ANT Wildlife Map.mxd

Created by: JM 2/8/08 | Jones & Stokes

N

A-1

Harrier

Upper Osbourne

Sand Gully

Prospects

T27N R93W | T27N R92W | T27N R92W | T27N R91W

T26N R93W | T26N R92W | T26N R92W | T26N R91W

T26N R93W | T26N R92W | T26N R92W | T26N R91W

T25N R93W | T25N R92W | T25N R92W | T25N R91W

Osborne Draw

Eagles Nest

Legend
- Antelope Project Area
- 2.0-Mile Survey Perimeter
- Sage-grouse Lek
- Pygmy Rabbit Habitat

Scale 1:55,000

Energy Metals Corporation

Antelope/JAB Uranium Project

Figure 3.5-4: JAB Wildlife

Datum: UTM NAD83, Zone 12N	Source: G:Gwyn\Mines\Energy Metals\ Great Divide\JAB Wildlife Map.mxd
Created by: JM 3/28/08	Jones & Stokes

Figure 3.5-4- JAB Wildlife Features
Uranium One Americas
Antelope and JAB Uranium Projects

N

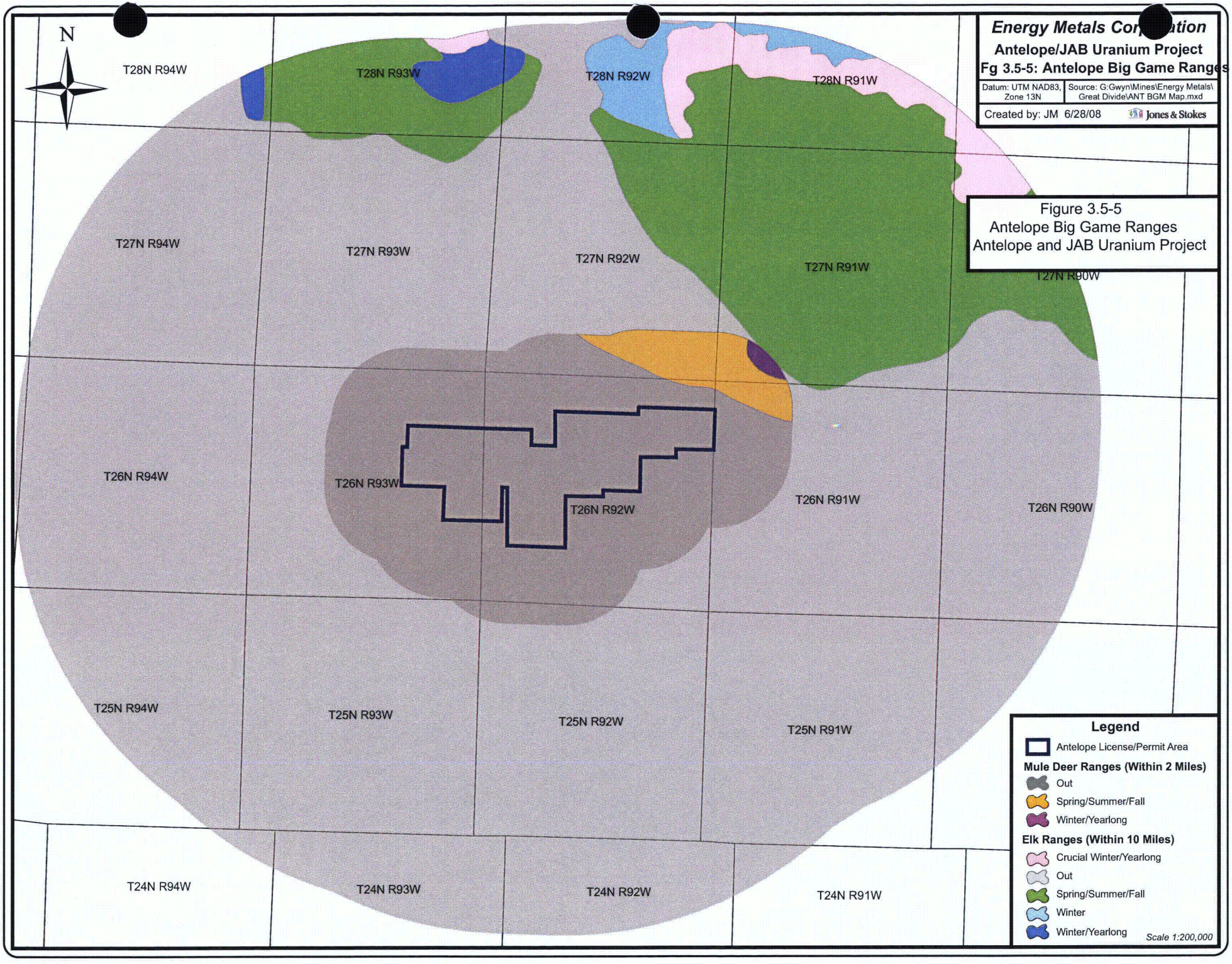
T27N R95W
T27N R94W
T27N R93W
T26N R95W
T26N R94W
T26N R93W
T25N R95W
T25N R94W

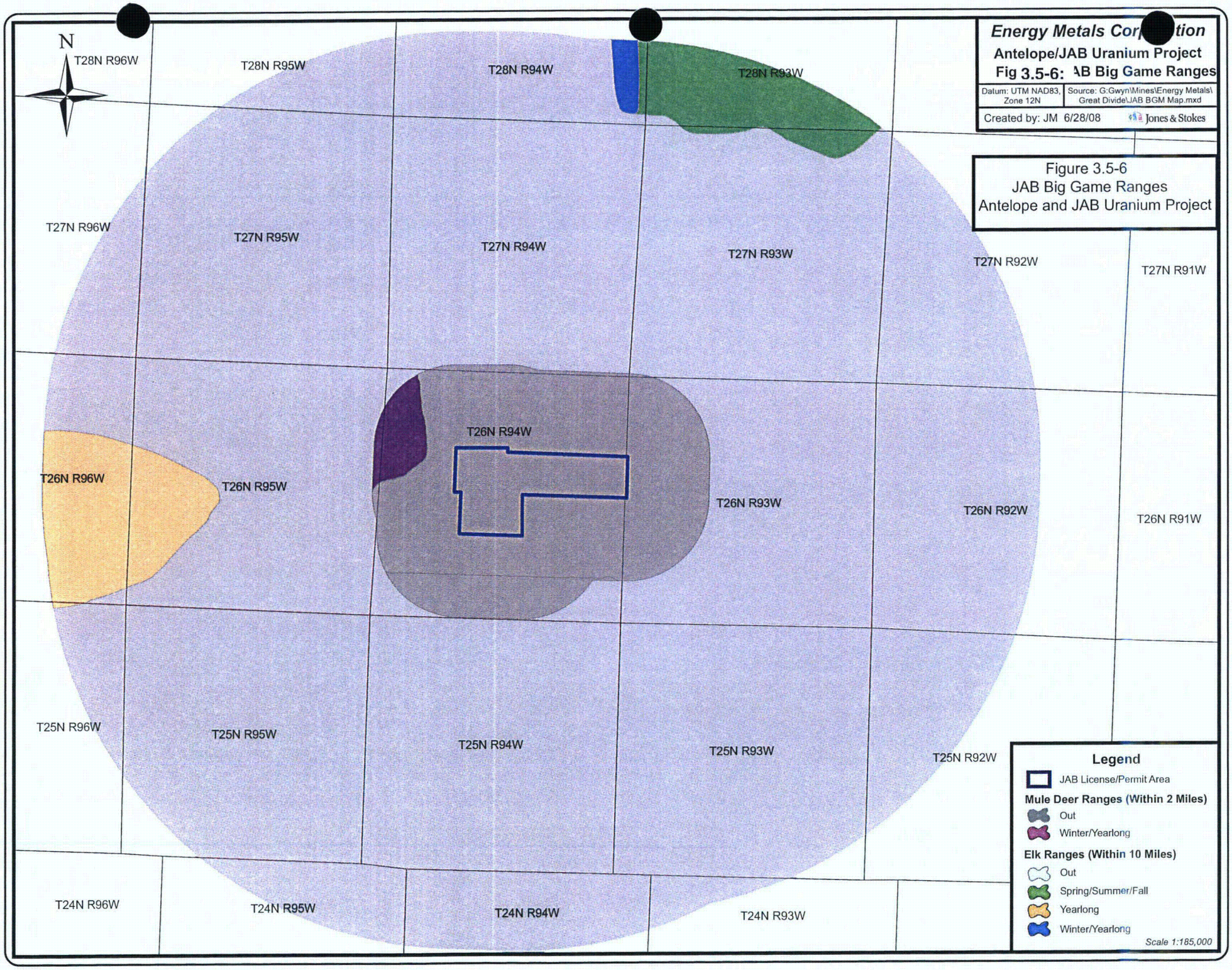
JAB-2
JAB-1
2179
2178
2180
2176
2177
2182
2183
2181
Arapahoe Lek

Legend
- JAB License/Permit Area
- 2.0-Mile Survey Perimeter
- Sage-grouse Lek
- Prairie Dog Colony
- Pygmy Rabbit Habitat
- BLM Raptor Nest Record

Intact Raptor Nests - 2007 Status
- Inactive
- Active

Scale 1:40,000


N
T28N R94W
T28N R93W
T28N R92W
T28N R91W
T27N R94W
T27N R93W
T27N R92W
T27N R91W
T27N R90W
T26N R94W
T26N R93W
T26N R92W
T26N R91W
T26N R90W
T25N R94W
T25N R93W
T25N R92W
T25N R91W
T24N R94W
T24N R93W
T24N R92W
T24N R91W
Energy Metals Corporation
Antelope/JAB Uranium Project
Fg 3.5-5: Antelope Big Game Ranges
Datum: UTM NAD83, Zone 13N
Source: G:Gwyn\Mines\Energy Metals\ Great Divide\ANT BGM Map.mxd
Created by: JM 6/28/08
Jones & Stokes
Figure 3.5-5
Antelope Big Game Ranges
Antelope and JAB Uranium Project
Legend
Antelope License/Permit Area
Mule Deer Ranges (Within 2 Miles)
Out
Spring/Summer/Fall
Winter/Yearlong
Elk Ranges (Within 10 Miles)
Crucial Winter/Yearlong
Out
Spring/Summer/Fall
Winter
Winter/Yearlong
Scale 1:200,000


N
T28N R96W
T28N R95W
T28N R94W
T28N R93W
T27N R96W
T27N R95W
T27N R94W
T27N R93W
T27N R92W
T27N R91W
T26N R96W
T26N R95W
T26N R94W
T26N R93W
T26N R92W
T26N R91W
T25N R96W
T25N R95W
T25N R94W
T25N R93W
T25N R92W
T24N R96W
T24N R95W
T24N R94W
T24N R93W
Energy Metals Corp tion
Antelope/JAB Uranium Project
Fig 3.5-6: AB Big Game Ranges
Datum: UTM NAD83, Zone 12N
Source: G:Gwyn\Mines\Energy Metals\ Great Divide\JAB BGM Map.mxd
Created by: JM 6/28/08
Jones & Stokes
Figure 3.5-6
JAB Big Game Ranges
Antelope and JAB Uranium Project
Legend
JAB License/Permit Area
Mule Deer Ranges (Within 2 Miles)
Out
Winter/Yearlong
Elk Ranges (Within 10 Miles)
Out
Spring/Summer/Fall
Yearlong
Winter/Yearlong
Scale 1:185,000

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3.6 METEOROLOGY

3.6.1 Introduction

Meteorological data have been compiled for fifteen sites surrounding the Antelope and JAB License Area. Data have been acquired through the Western Regional Climate Center (WRCC, 2007) for 14 coop and ASOS stations operated by the National Weather Service (NWS) including Alcova 17NW, Bitter Creek 4NE, Farson, Gas Hills 4E, Jeffery City, Leo 6SW, Muddy Gap, Pathfinder Dam, Rawlins AP, Rock Springs AP, Sand Draw, Seminoe Dam, South Pass City, and Wamsutter. In addition, Seminoe II Mine meteorological data have been obtained through Inter-Mountain Laboratories (IML). The latter mentioned site is operated in compliance with regulations set forth by the Wyoming Air Quality Division (AQD) for air quality monitoring. IML has maintained the site and archived the data for nearly 15 years. Table 3.6-1 provides the station name, agency, coordinates, elevation, and period of operation for each site.

The 15 sites collectively have been analyzed to provide a regional climatic temperature and precipitation analysis of the project area. Only the Seminoe II Mine site will be analyzed for the wind summary. The 14 NWS sites will be incorporated into the snowfall discussion as neither mine site records snowfall data. Figure 3.6-1 shows the 15 sites in relation to the project permit boundaries. The closest NWS operated station which continuously records all weather parameters is the Rawlins AP site.

No on-site data are available for the proposed area. The Seminoe II Mine meteorological data are proposed as the most representative available data set for the site specific analysis. Seminoe II Mine lies 70 miles east of the proposed project area (Figure 3.6-2), with similar terrain (Figure 3.6-3). The elevation at Seminoe II is slightly less than 6,900 ft. while elevations in the Antelope and JAB License Area are typically 7,100 to 7,200 ft. Both sites are influenced by east-southeast to west-northwest trending mountain ranges located 10 to 15 miles to the north. Muddy Gap, at 23 miles from the central project area, is the NWS station closest to the Antelope and JAB License Area While winds at Muddy Gap are not expected to be representative of the project area, data from Muddy Gap exhibit precipitation totals (Figure 3.6-4) very similar to Seminoe II. Meteorological instrument locations and specifications for Seminoe II appear in Table 3.6-9.

Figure 3.6-1 NWS and Coal Mine Meteorological Status

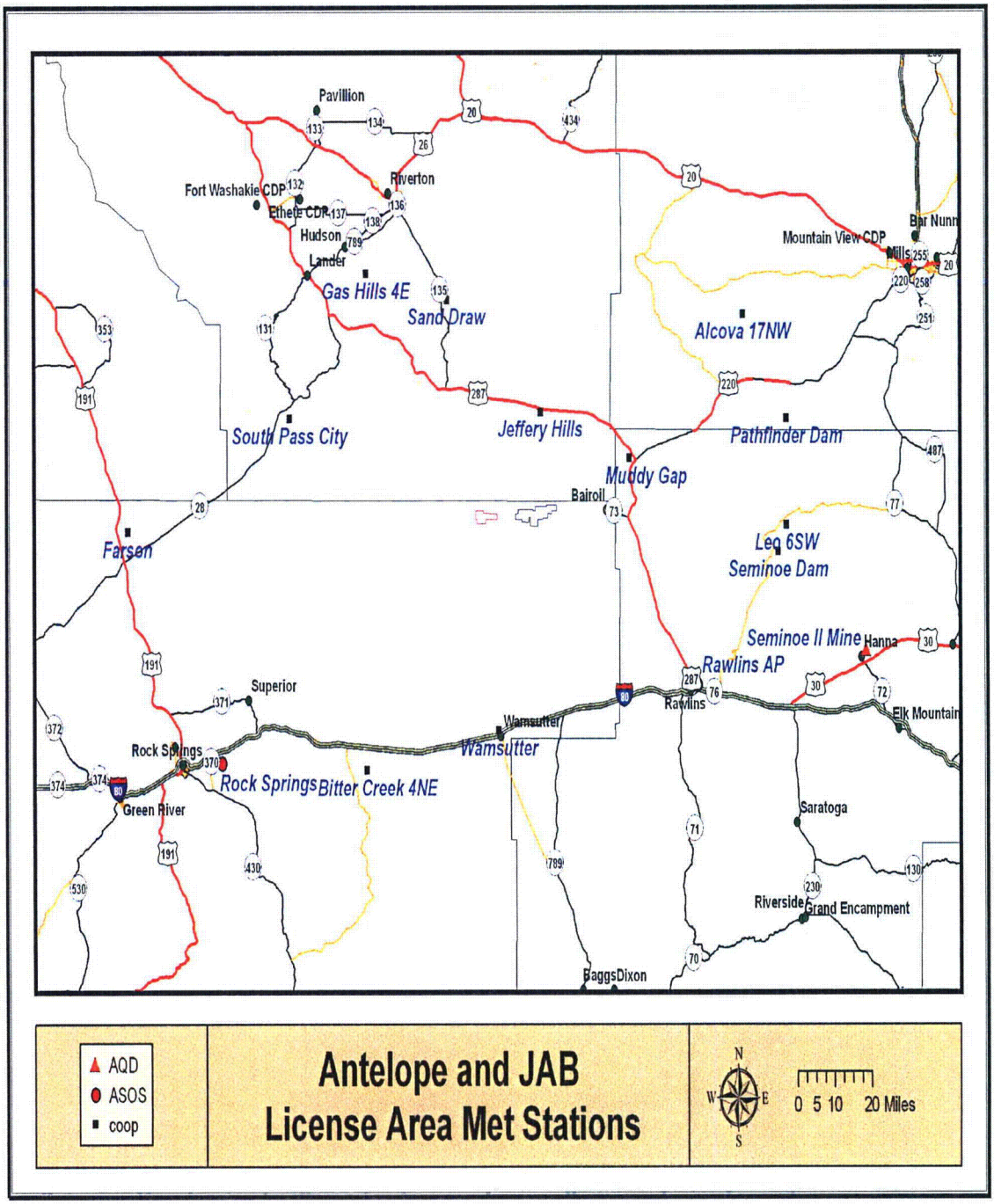


Figure 3.6-2 Relationship between Seminoe II Mine and Project Area

Figure 3.6-3 Geography of Seminoe II Mine and Project Area

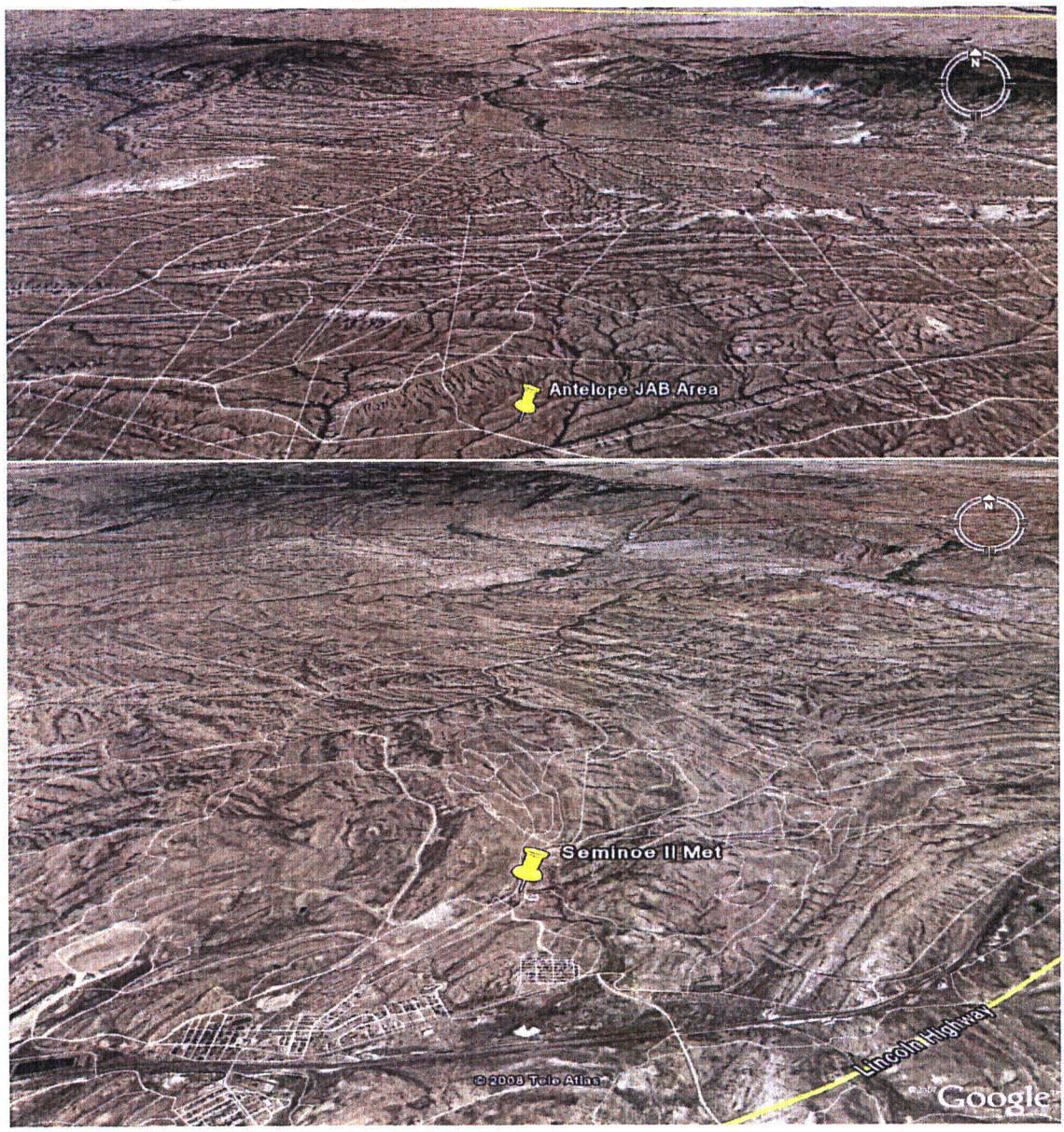
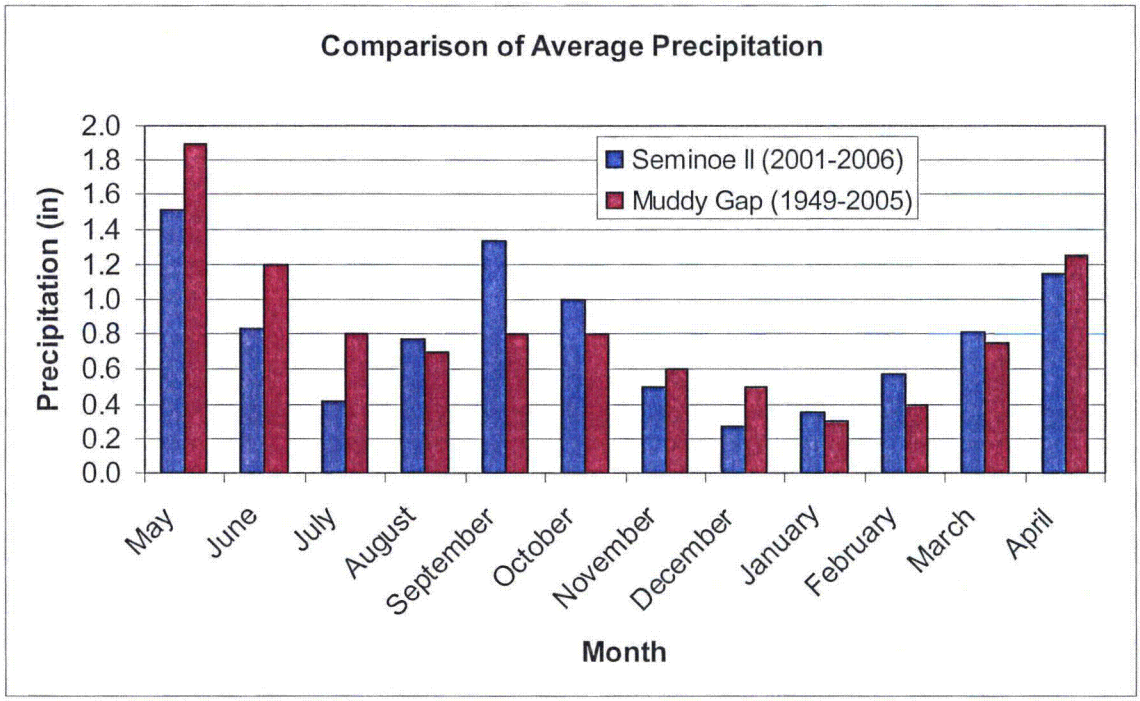


Figure 3.6-4 Precipitation at Seminoe II Mine and Muddy Gap



On-site meteorological data from the Sweetwater Uranium Project, although collected during the 1975-1994 time period, show similarities to Seminoe II. The Sweetwater Project is located approximately 12 miles southeast of the Antelope and JAB License Area. Table 3.6-8 presents a comparison of monthly temperature statistics for Sweetwater and Seminoe II. Diurnal temperature variations by season (Figure 3.6-5) resemble those presented in the Sweetwater Uranium Project report. Wind speeds from 2001 through 2005 average somewhat higher at Seminoe II (14.7 mph) than those recorded from 1983 to 1987 at Sweetwater (9.5 mph); however, the directional trends are similar. Roughly 43% of the winds at Seminoe II originate from the WSW, SW and SSW directions, compared with 34% at the Sweetwater site. Precipitation for Sweetwater averaged 5.4" per year from 1978 to 1990, compared to 9.4" per year for Seminoe II between 2001 and 2005. Pan evaporation for the Sweetwater site averaged 60" per year, typical of published values for this region. No pan evaporation was measured at Seminoe II.

A recent, one-year monitoring program at the Lost Soldier meteorological station also tends to validate the suitability of the Seminoe II Mine as a representative data source. The Lost Soldier site is near Baroil, and approximately 10 miles east of the Antelope and JAB License Area. Data from this site were summarized in the Lost Creek Project, NRC

Technical Report (2007). Winds at Lost Creek were predominantly from the west or west-northwest, while winds at Seminoe II are predominantly from the west or west-southwest. In both cases, about 13% of the wind speeds exceeded 11.1 m/sec. The Lost Soldier study cited atmospheric conditions that promote dispersion 91% of the time, while Seminoe II data show good dispersion 86% of the time (Stability Classes A through D, Table 3.6-7).

A regional climate overview will be presented first. The section will include a discussion of the maximum and minimum temperature, relative humidity, and annual precipitation including snowfall estimates. Seminoe II Mine provides the only wind data for the region. Rawlins AP will be incorporated into the regional overview and Seminoe II Mine will be analyzed for the site specific analysis. The last portion of the regional analysis will include a general climate data summary from Rawlins. No site specific general climate data will be included as the regional evaluation is deemed adequate.

The site specific discussion will follow with the analysis based on the Seminoe II Mine meteorological data with many of the same parameters listed previously. An in-depth wind analysis will be comprised of summaries including wind speed and direction averages, joint frequency distributions to characterize the wind data for the site by stability class, and wind speed distributions to provide insight into the wind speed relative frequencies. A seasonal data discussion is included for the temperature and wind parameters. The seasonal classification does not follow the general calendar dates. The seasons are classified in three month intervals as follows; January – March for winter, April-June for spring, July – September for summer, and October – December for fall.

Table 3.6-1 Meteorological Stations Included in Climate Analysis

Name	Agency	Lat	Long	Elev	Years_Operation
Seminoe II Mine	AQD	41.89	106.54	7055	1995-2007
Alcova 17NW	NWS	42.44	107.01	6870	1962-1987
Bitter Creek 4NE	NWS	41.35	108.31	6720	1962-2005
Farson	NWS	42.07	109.26	6590	1948-2005
Gas Hills 4E	NWS	42.5	107.29	6470	1962-2005
Jeffery City	NWS	42.3	107.5	6340	1964-2005
Leo 6SW	NWS	42.12	106.51	6040	1948-2005
Muddy Gap	NWS	42.22	107.28	6240	1949-2005
Pathfinder Dam	NWS	42.28	106.51	5930	1948-2005
Rawlins AP	NWS	41.48	107.12	6740	1928-2005
Rock Spring AP	NWS	41.36	-109.04	6740	1948-2005
Sand Draw	NWS	42.46	108.11	5960	1948-1979
Seminoe Dam	NWS	42.08	106.53	6840	1948-2005
South Pass City	NWS	42.28	108.48	7840	1948-2005
Wamsutter	NWS	41.41	107.59	6800	1948-2005

The site specific discussion will follow with the analysis based on the Seminoe II Mine meteorological data with many of the same parameters listed previously. An in-depth wind analysis will be comprised of summaries including wind speed and direction averages, joint frequency distributions to characterize the wind data for the site by stability class, and wind speed distributions to provide insight into the wind speed relative frequencies. A seasonal data discussion is included for the temperature and wind parameters. The seasonal classification does not follow the general calendar dates. The seasons are classified in three month intervals `as follows; January – March for winter, April-June for spring, July – September for summer, and October – December for fall. No site specific general climate data will be included as the regional evaluation is deemed adequate.

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3.6.2 Regional Overview

3.6.2.1 Temperature

The annual average temperature for the region is approximately 42.5° F. The graph (Figure 3.6-5) shows monthly average temperatures for the Seminoe II Mine and Rawlins AP sites. As illustrated, there is very little difference exhibited between the two sites. July shows the highest average monthly temperatures followed by August. January and December record the lowest average temperatures for the year. Table 3.6-2 compares the monthly average temperatures for the sites. The slight differences in average temperatures could be attributed to the small change in elevation between the stations.
The proposed project region has annual average maximum temperatures of 54° to 55°F and average minimum temperatures of near 30°F. July has the highest maximum temperatures with averages of 83.5°F while the lowest minimum temperatures are observed in January with averages approaching 9°F. Annual average minimum and maximum temperatures are shown in Figure 3.6-7 and Figure 3.6-8, respectively. The site specific monthly averages are shown in Table 3.6-2.

Large diurnal temperature variations are found in the region due in large part to the high altitude and low humidity. Figure 3.6-6 depicts the average seasonal diurnal temperature variations for the Seminoe II Mine site. Spring and summer daily variations of 16° - 18°F are common with maximum temperature variations of 18° - 22°F observed during extremely dry periods. Less daily variation is observed during the cooler portions of the year as fall and winter have variations of 10° - 13°F.

The late spring and summer months have the greatest diurnal variation in temperature. This is due in large part to the extended periods of high insolation occurring during the long daylight hours. The lesser variation in daily temperature during the fall and winter months can be attributed to more stable atmospheric conditions in the region. Stable periods have much lower mixing heights and accompanying lapse rates allowing for less temperature variation.

Table 3.6-2 Average Monthly Temperatures for Seminoe II Mine and Rawlins AP

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Rawlins	21.8	24.2	30.8	40.1	50.1	60.0	67.5	65.5	55.7	44.1	30.4	23.0	42.8
Seminoe II	23.5	21.9	30.4	40.3	49.9	59.7	69.8	64.9	55.5	43.3	29.2	22.5	42.2

Figure 3.6-5 Annual and Monthly Average Temperatures for Seminoe II Mine and Rawlins AP

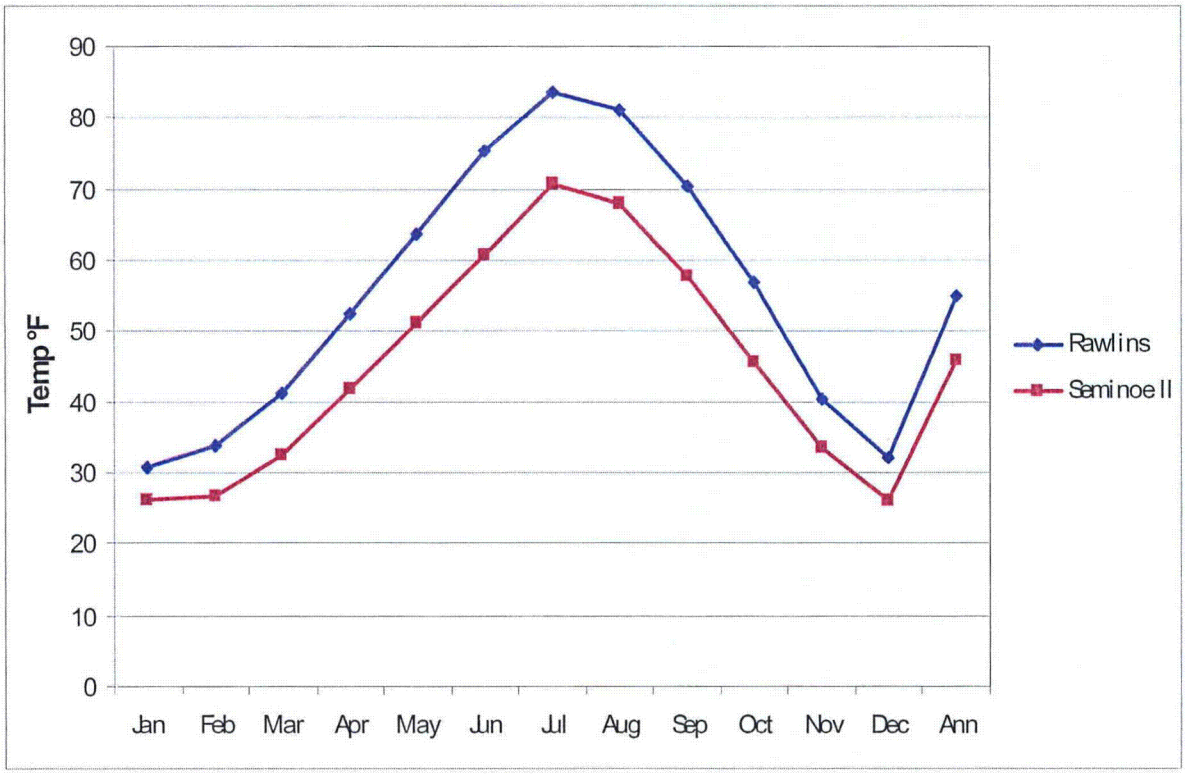


Figure 3.6-6 Seminoe II Mine Seasonal Diurnal Temperature Variations

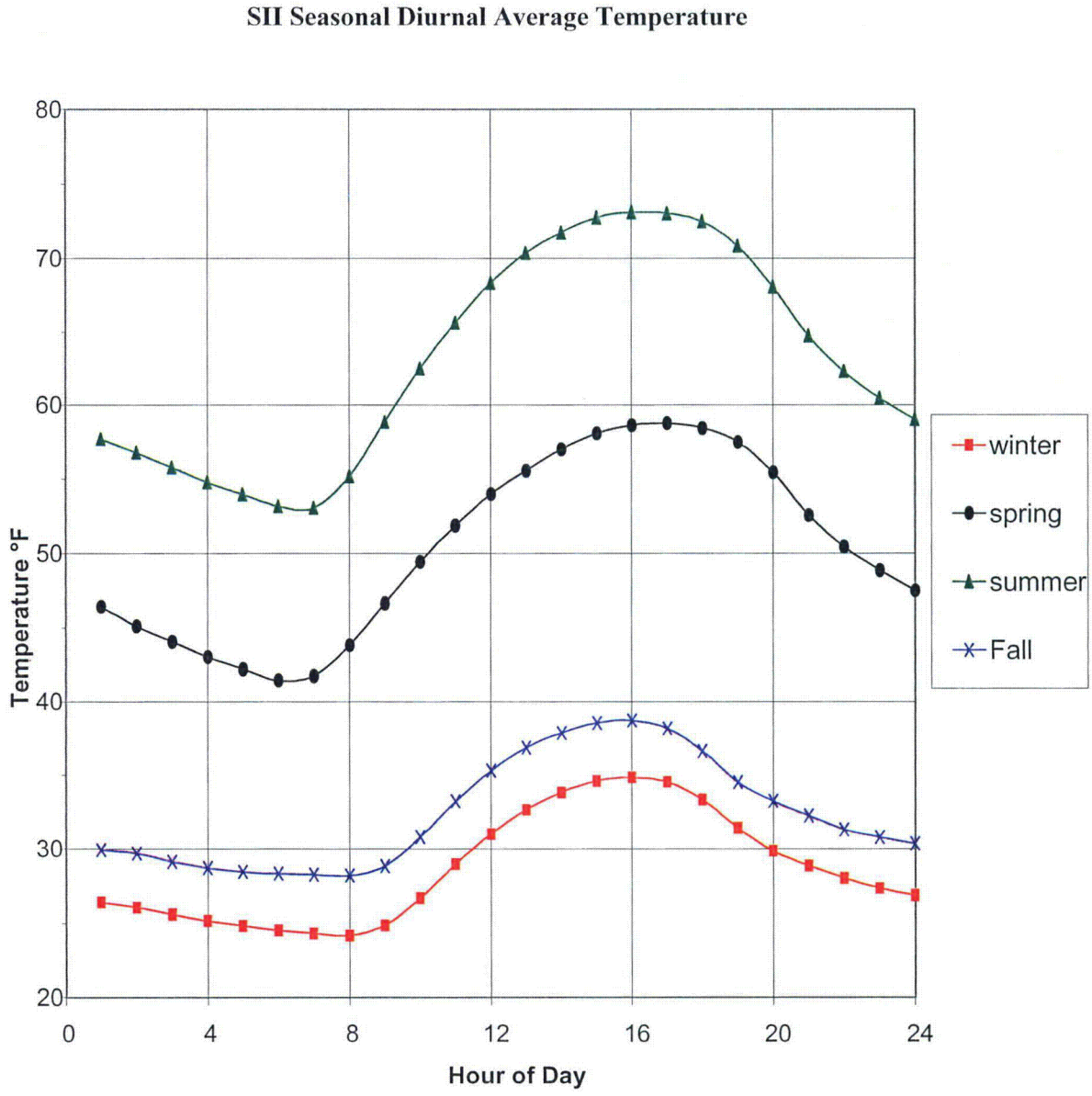


Figure 3.6-7 Regional Annual Average Minimum Temperatures

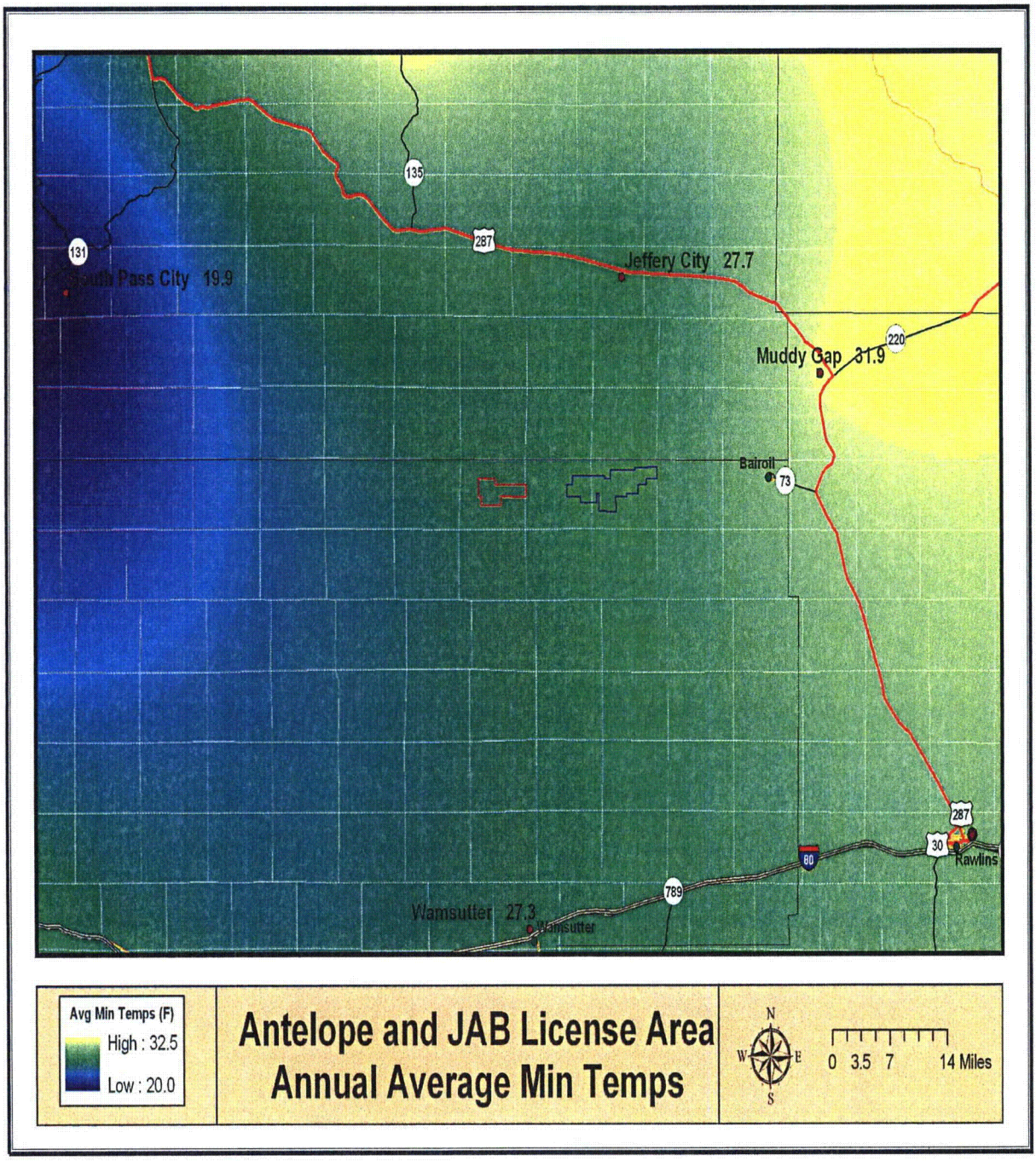
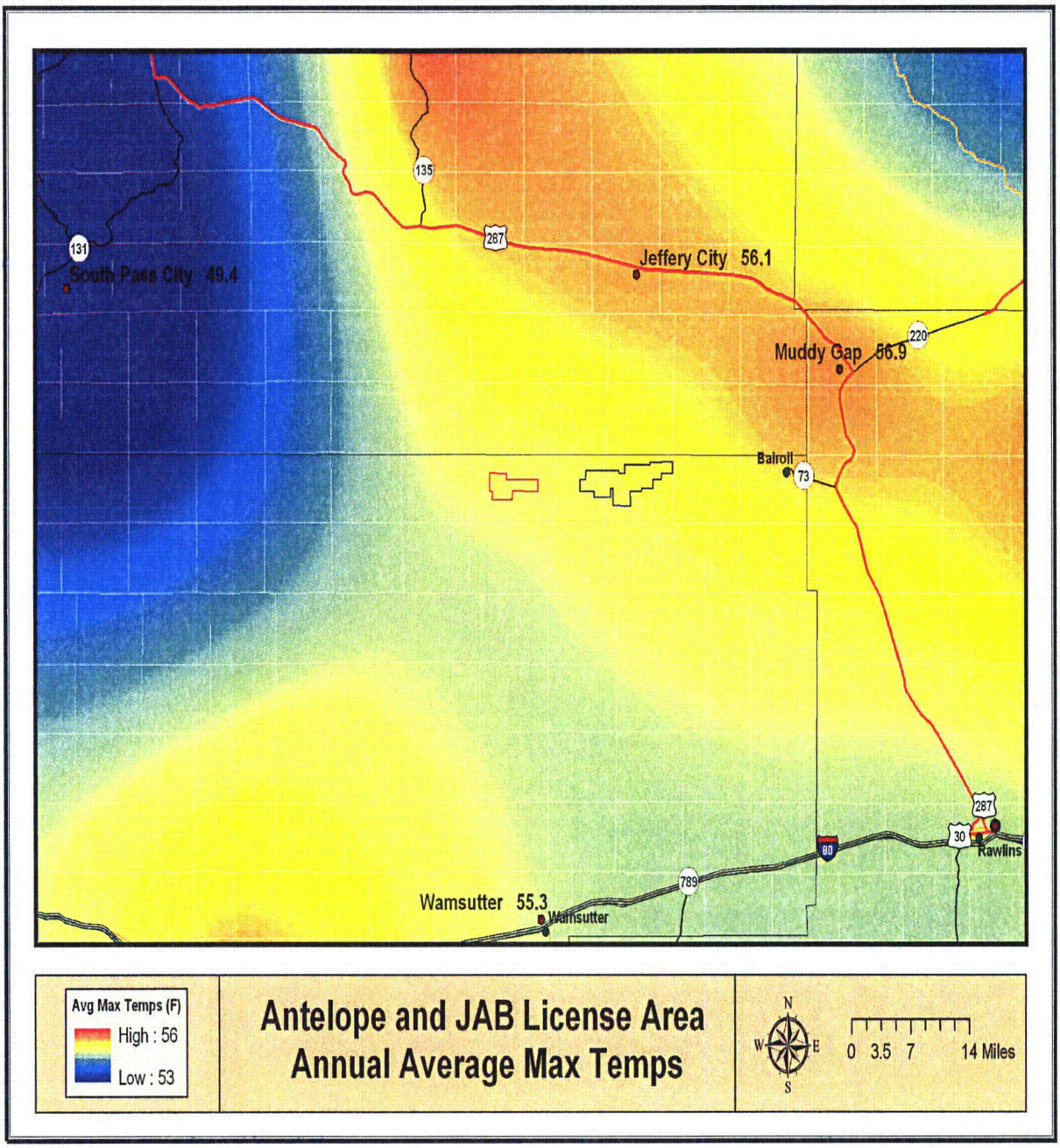


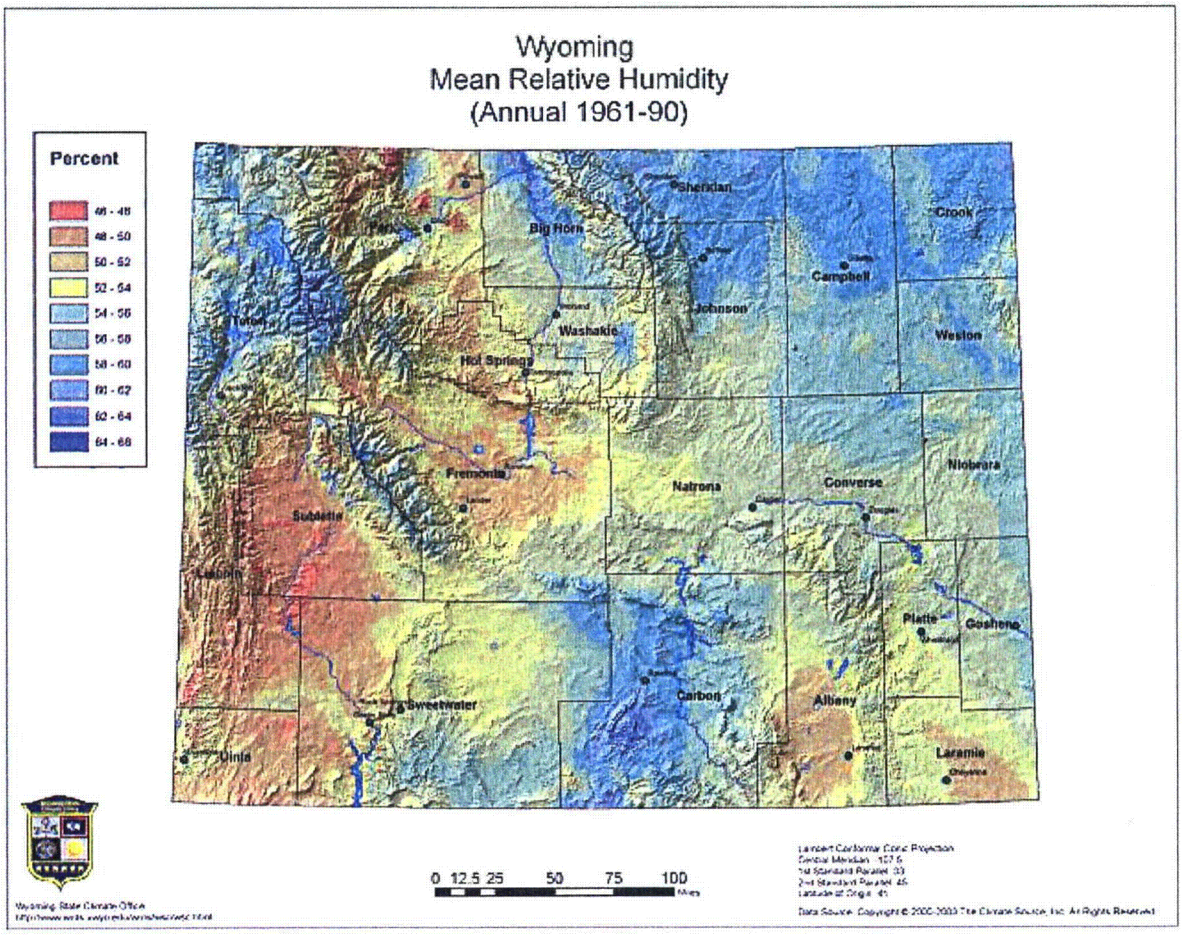
Figure 3.6-8 Regional Annual Average Maximum Temperatures



3.6.2.2 Relative Humidity

The region is characterized by low relative humidity. Summer daytime values typically range from 25 – 30% and can reach extremely low values of 5 – 10%. Summer diurnal variations of 40 – 50% are not uncommon. Winter time variations are usually less extreme than those of summer. This is due in larger part to the higher winds which allows for greater mixing and shorter periods of sunlight which promotes less temperature change. The combination creates diurnal variations of 20 – 25%. The map shown in Figure 3.6-9 presents data taken from the Wyoming Climate Atlas (WRDS, 2007). The region has mean values of 50 – 60%.

Figure 3.6-9 Mean Monthly and Hourly Relative Humidity for Rawlins APP (WRDS, 2007)

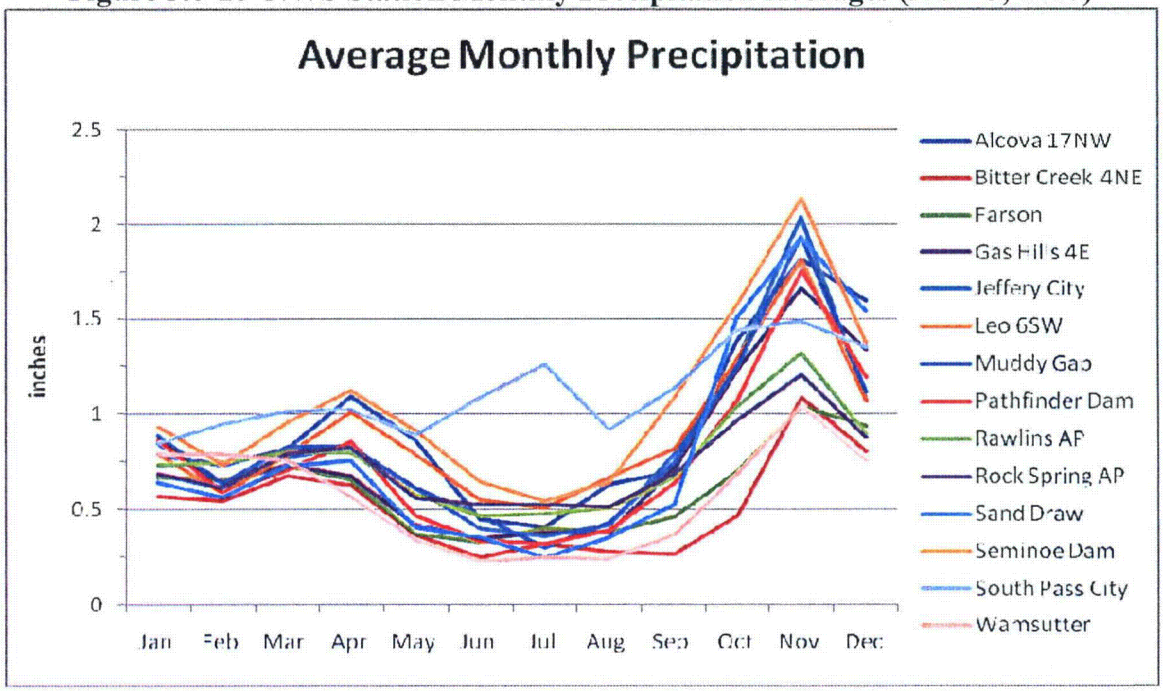


3.6.2.3 Precipitation

The region is characterized by extremely dry conditions. On average, the region experiences only about 80 days with measurable (>0.01 in) precipitation (WRCC, 2007). The proposed project region has an annual average in the 8.5 – 10.5 inch category based on interpolating regional values (Figure 3.6-10). Late fall and early winter (Oct-Dec) precipitation events produce the majority of the precipitation, 40%. November is typically the wettest month of the year; all stations have monthly averages greater than 1 inch for that time as can be seen in Figure 3.6-11 below. January, on the contrary, is the driest month of the year with precipitation totals generally between one half inch and one

inch. The summer months (Jul-Sept) typically account for only 15% of the yearly totals. A secondary minimum is also evident during August as warm, dry conditions develop over the course of the summer months. This promotes extremely stable conditions and light precipitation amounts as convective activity is limited.

Figure 3.6-10 NWS Station Monthly Precipitation Averages (NCDC, 2007)



Severe weather does arise throughout the region, but is limited to 3 - 4 severe events per year. These severe events are generally split between hail and damaging wind events. Tornadoes can occur but on rare occasions, with less than one tornado every eight years (Martner, 1986).

Major snowstorms (more than 6 in/day) do frequent the region. The region experiences one to two of these snowstorms per year. South Pass City has the highest annual snowfall of all the sites with an average of nearly 116 inches. This value is sharply contrasted by four sites having annual averages less than 25 inches. The extremely low averages might be attributed to operator error during the measurements. However, a portion of the disparity between the sites can be attributed to the elevation of South Pass City, located at nearly 8000 ft. above sea level and on average 1500 ft higher than all the other stations included in the study. The interpolated values (Figure 3.6-12) show the project region having averages of 45-50 inches. These values agree well with the Wyoming Climate Atlas (Martner, 1986) which lists averages for northeastern

Sweetwater County at 40 inches and southeastern Fremont County having averages of 60 inches. Substantial monthly averages (more than 6 in/month) occur for half the year. "Measurable" averages (>1 in/month) occur an additional three months of the year (Figure 3.6-13).

Figure 3.6-11 NWS Station Monthly Snowfall Averages (NCDC, 2007).

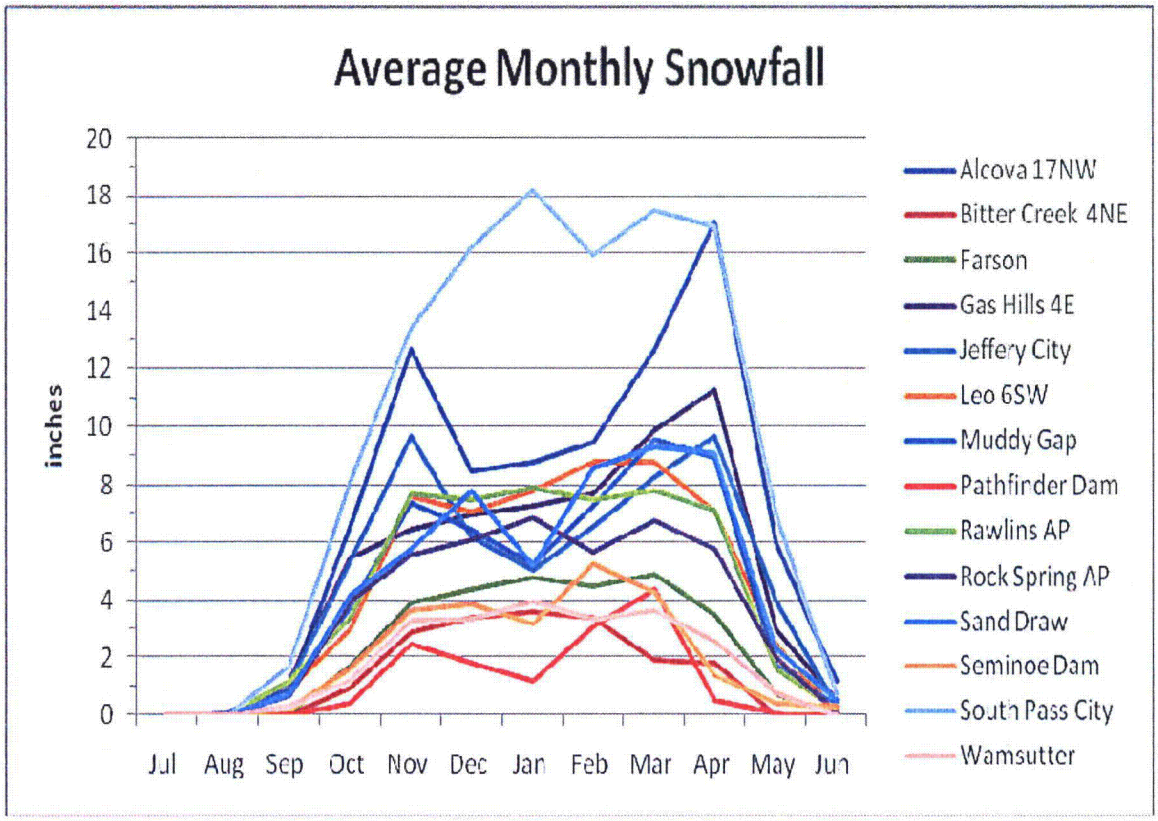


Figure 3.6-12 Regional Annual Average Precipitation

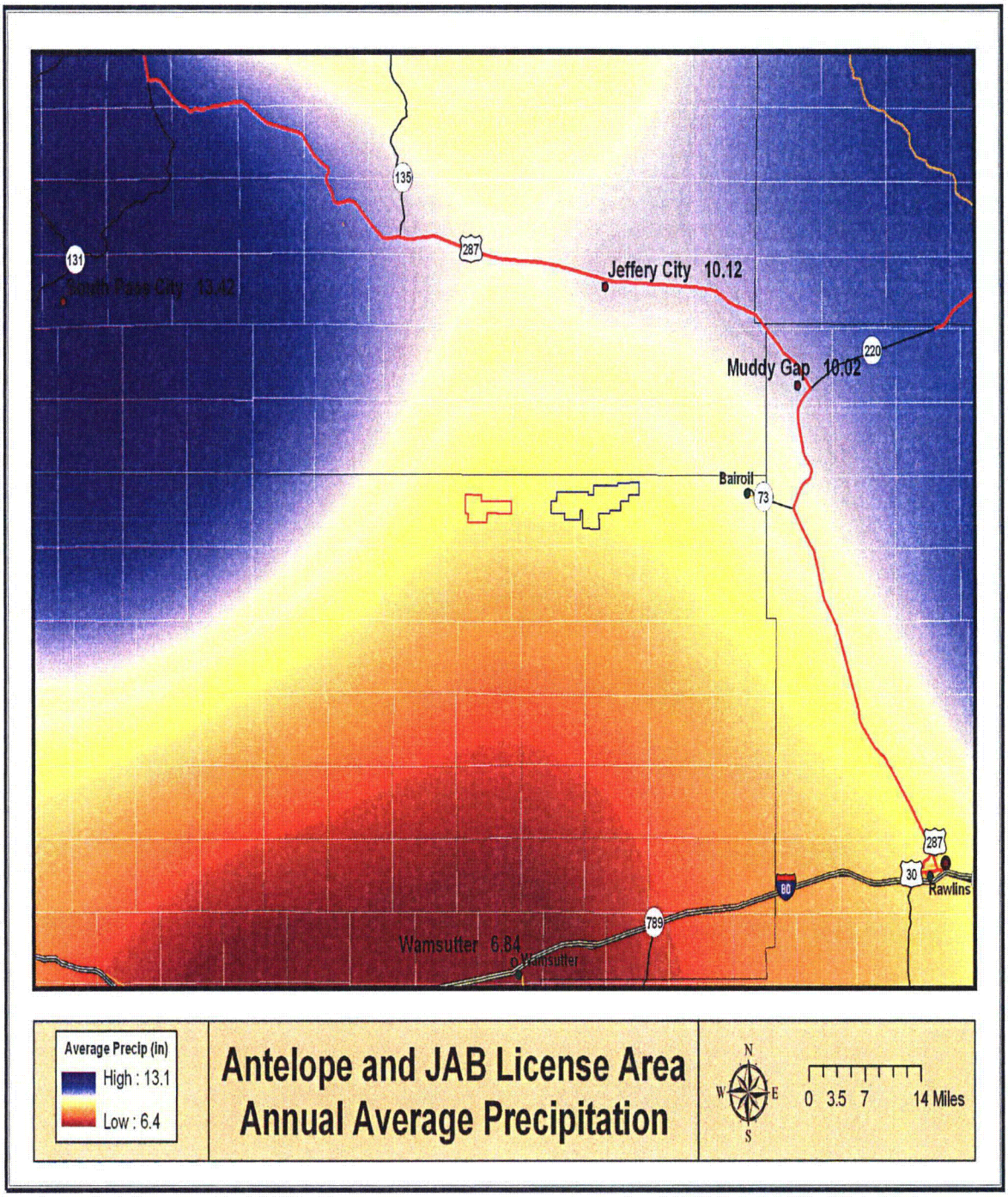
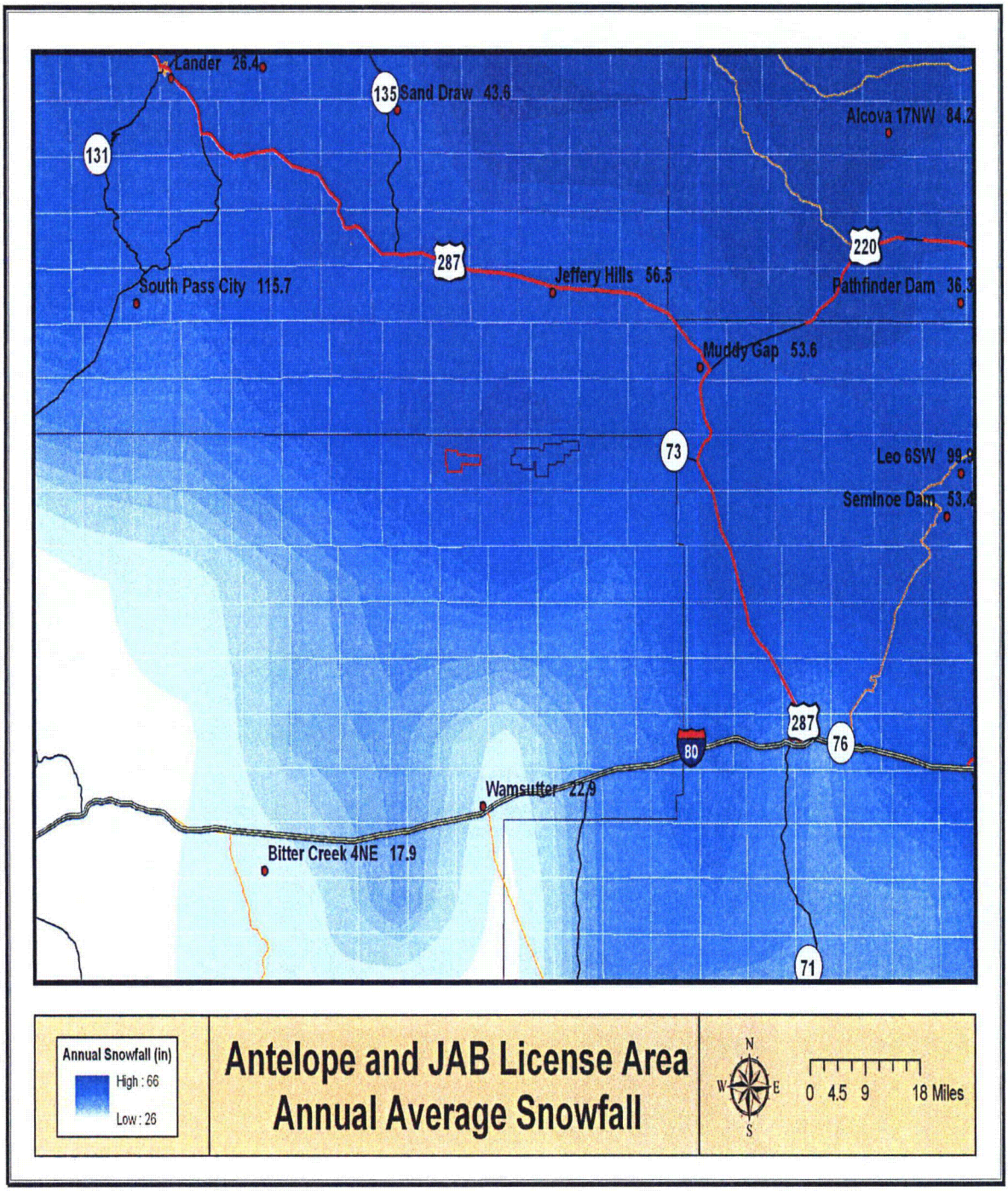


Figure 3.6-13 Regional Annual Average Snowfall



3.6.2.4 Wind Patterns

The Casper AP site averaged 12.8 mph for the 50+ years included in its climate database. The wind patterns throughout the region show very little variability. Strong west/southwesterly winds frequent the region. More than 40% of the time the wind direction is from the southwest to west sectors and accompanying wind speeds are generally fairly high with averages greater than 12 mph nearly 75% of the time. Mean monthly values from the Casper AP show July having the lowest value of 10.1 mph and January the highest at 16.3 mph. Table 3.6-3 shows the monthly wind speed and direction averages along with monthly gust values. NWS direction data are summarized to the nearest 10 degrees. High wind events are a regular event as gust data from the Casper AP shows every month recording wind gusts greater than 60 mph. Little change is evident in the predominant seasonal wind directions. Spring and summer show west/southwest as the predominant direction, with southwest winds dominating fall and winter.

Table 3.6-3 Casper AP Monthly Wind Parameters Summary (WRCC, 2007)

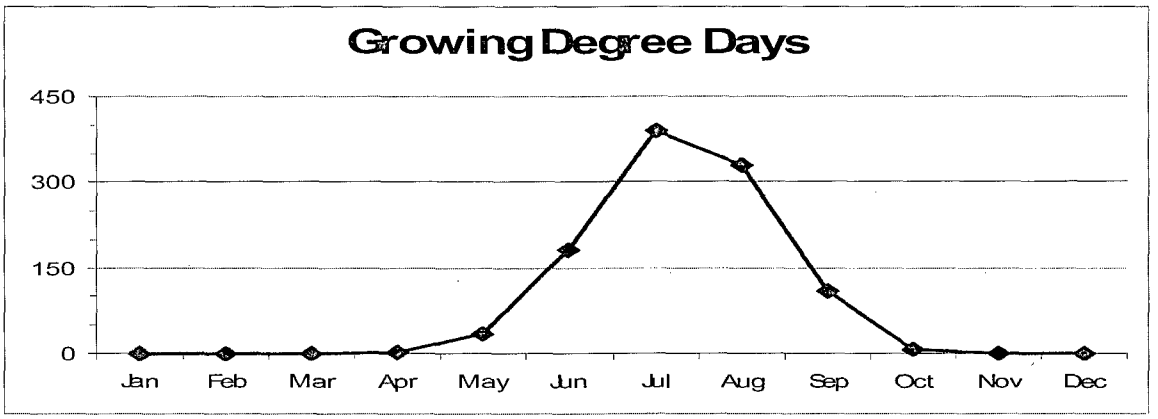
	Wind Speed	Wind Direction	Wind Gust
JAN	16.3	SW	67
FEB	15.0	SW	64
MAR	13.8	SW	63
APR	12.6	WSW	60
MAY	12.6	WSW	64
JUN	11.0	WSW	64
JUL	10.1	WSW	60
AUG	10.3	SW	62
SEP	10.9	WSW	63
OCT	12.0	SW	62
NOV	14.4	SW	60
DEC	16.0	SW	66
ANN	**12.8**	**SW**	**67**

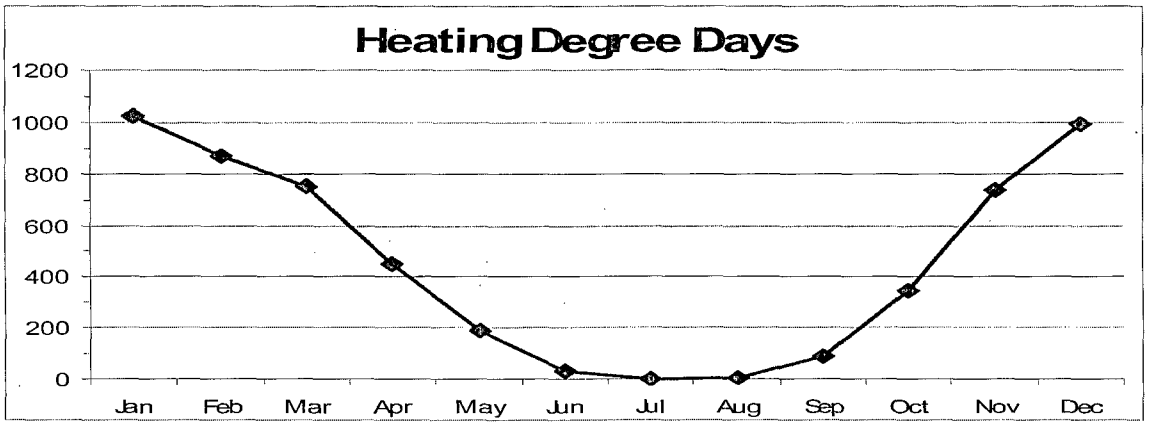
3.6.2.5 Cooling, Heating, and Growing Degree Days

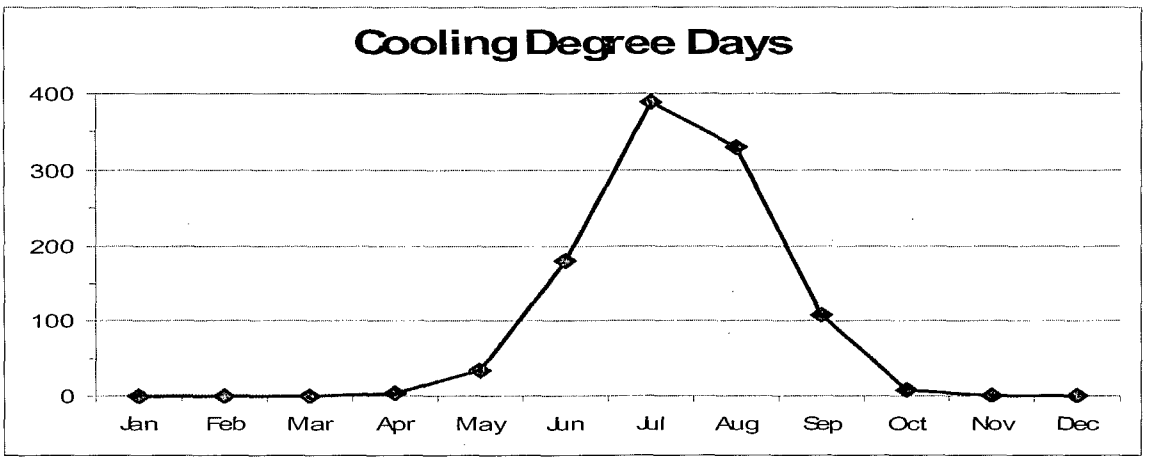
The graphs shown in Figure 3.6-14 summarize the cooling, heating, and growing degree days for Rawlins. The data are assumed to be indicative of the region as the other meteorological parameters for the various sites track very closely. The heating and cooling degree days are included to show deviation of the average daily temperature from a predefined base temperature. In this case, 55°F has been selected as the base temperature. The number of heating degree days is computed by taking the average of the high and low temperature occurring that day and subtracting it from the base temperature. The calculation for computing growing and cooling degree days is the same. The number of days is computed in the opposite fashion as the base temperature is subtracted from the average of the high and low temperature for the day. Negative values are disregarded for both calculations.

As expected, the heating degree days and cooling degree days are inversely proportional and the number of growing and cooling degree days is identical when the same base temperature is chosen. The maximum number of heating degree days occurs in January, 1029 degree days, which coincides with January having the lowest minimum average temperature. Conversely, July registers the most cooling/growing degree days with 389, which also corresponds to July having the highest maximum average temperature.

Figure 3.6-14 Rawlins Cooling, Heating, and Growing Degree Days (WRC, 2007)







3.6.3 Site Specific Analysis

The site specific discussion will be limited to the meteorological data from the Seminoe II Mine. The site was chosen as a surrogate site based on its proximity and similar topographic features to the permitted region. This region is characterized by high desert plains with minor ridges. The vegetation types are mainly confined to sage brush. The Seminoe II Mine meteorological station is located on a slight rise with abundant sage brush.

3.6.3.1 Temperature

The annual average site temperature is 42.2°F with a maximum of 93°F and minimum falling to nearly -18°F. Figure 3.6-15 shows the seasonal average temperature for the site. The accompanying Table 3.6-4 provides the maximum, minimum and average seasonal temperatures. Average temperatures range from -25°F in the winter to 63°F in the summer.

Table 3.6-5 provides a meteorological summary for the surrogate site. The averages, maximums, and minimums are specified for each parameter recorded at the site along with the recovery rate for each. The recovery rates are 93.6% for all parameters. The high recovery rates reinforce the data as being representative of the conditions present in the region.

Figure 3.6-15. Seminoe II Mine Seasonal Average Temperatures

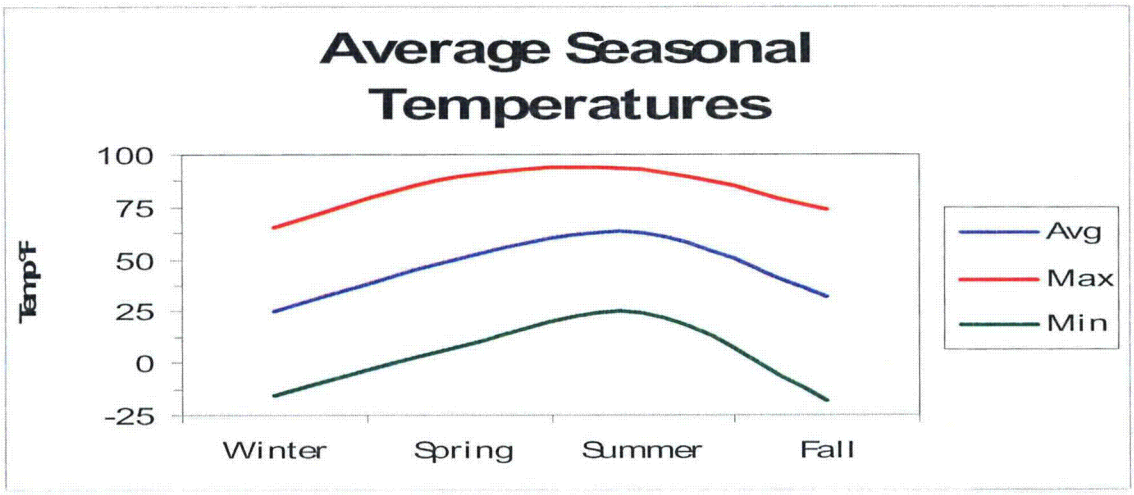


Table 3.6-4 ACC Seminoe II Max, Min, and Average Seasonal Temps (°F)

	Seminoe II Mine		
	Avg	**Max**	**Min**
Winter	25.4	65.7	-15.2
Spring	50.4	90.0	8.2
Summer	63.1	93.0	24.8
Fall	32.1	73.8	-17.7

Table 3.6-5 Seminoe II Mine Meteorological Summary for 2001 – 2005

Hourly Data

	Average/Total	Max	Min
Wind Speed (mph)	11.2	50.6	0.0
Sigma-Theta (°)	16.3	82.0	0.4
Temperature (F)	47.5	102.1	-33.8
Precipitation (in)	102.34	1.48	

Predominant wind direction was from the W sector, accounting for 15.2% of the possible winds

Data Recovery

Parameter	Possible (hours)	Reported (hours)	Recovery
Wind Speed	87648	81938	93.49%
Wind Direction	87648	81951	93.50%
Sigma-Theta	87648	81951	93.50%
Temperature	87648	83702	95.50%
Precipitation	87648	83705	95.50%

3.6.3.2 Wind Patterns

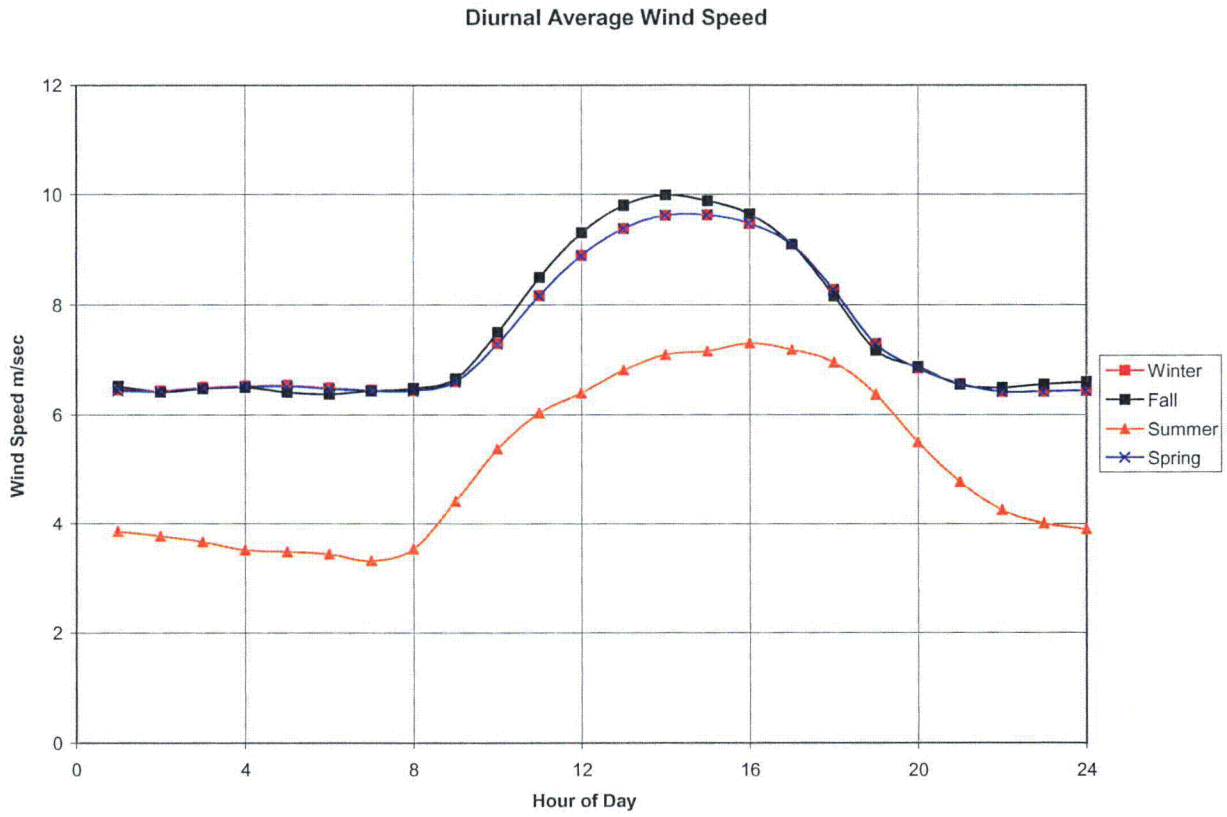
Table 3.6-5 summarizes all of the meteorological data collected at the Seminoe II Mine from 2001 through 2005. Figure 3.6-17 shows the seasonal wind roses for Seminoe II Mine during the same period. The Seminoe II Mine predominant wind direction is west/southwest with a secondary westerly maximum. High Pressure located over the southwestern United States is the culprit for the strong west/southwesterly winds which frequent the region. Spring experiences the greatest variability in wind direction with secondary modes from the northeast and easterly directions. The modes are a result of the synoptic scale transition period that occurs during this time. Low pressure regions develop on the lee side of the Rockies bringing "wrap around" east /northeast winds during development. As the low pressure systems form and move off with the general atmospheric flow, winds switch back to the southwest.

The monthly and seasonal wind speeds are summarized in Figure 3.6-16. The graphs show substantial differences between the winter and summer averages. Late fall and wintertime averages are in the 7-8 m/s (16-17 mph) range while summer time averages dip to 5-6 m/s (low to mid teens mph). Overall, the site experiences differences of 3.5 m/s (approximately 8 mph) from summer to winter months.

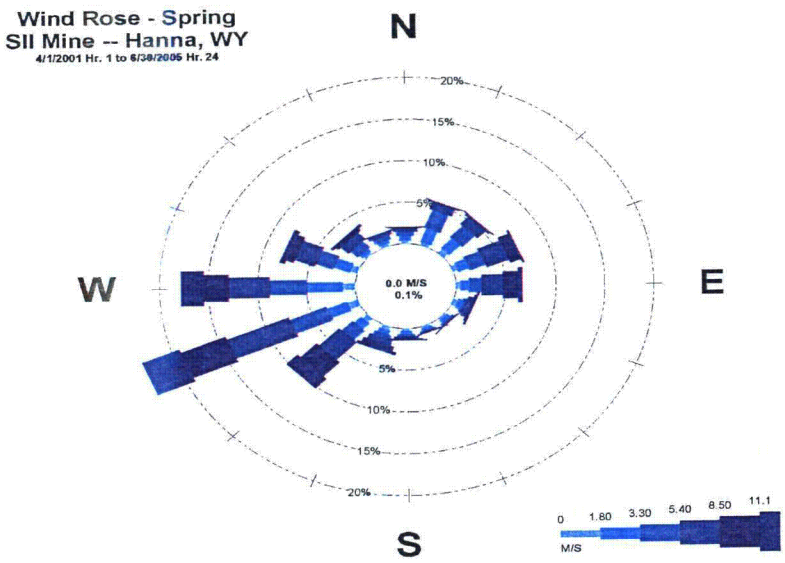
The site average wind speed for Seminoe II Mine is 6.55 m/s (14.7 mph) for the five year period analyzed. A closer look at the wind speed, summarized in the Seminoe II Mine wind summary (Table 3.6-6), shows the west/southwesterly component average wind speed is 8.6 m/s (18.4 mph). The values suggest that the predominant wind direction is comprised of high, sustained wind speeds. Maximum hourly averages of greater than 50 mph have been recorded at the mine site. Figure 3.6-16 shows the cumulative frequency wind speed distributions for Seminoe II Mine. It is clearly evident from the graphs that light wind speeds are a rare occurrence.

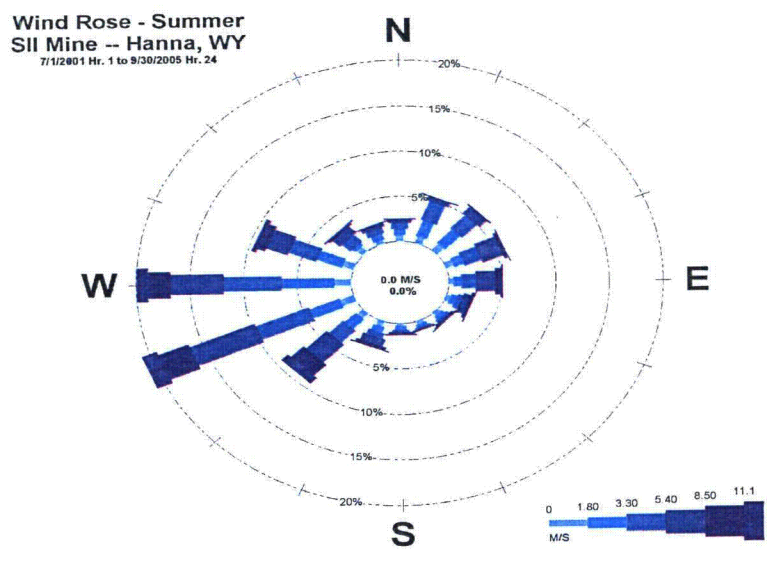
The diurnal wind speed graph in Figure 3.6-18 shows the highest wind speeds occur during the early afternoon hours while early morning experiences the lowest wind speed averages. The extremes show a difference of close to 4 m/s (8.5 mph). The graph also shows that with the exception of summer the diurnal variation is very uniform.

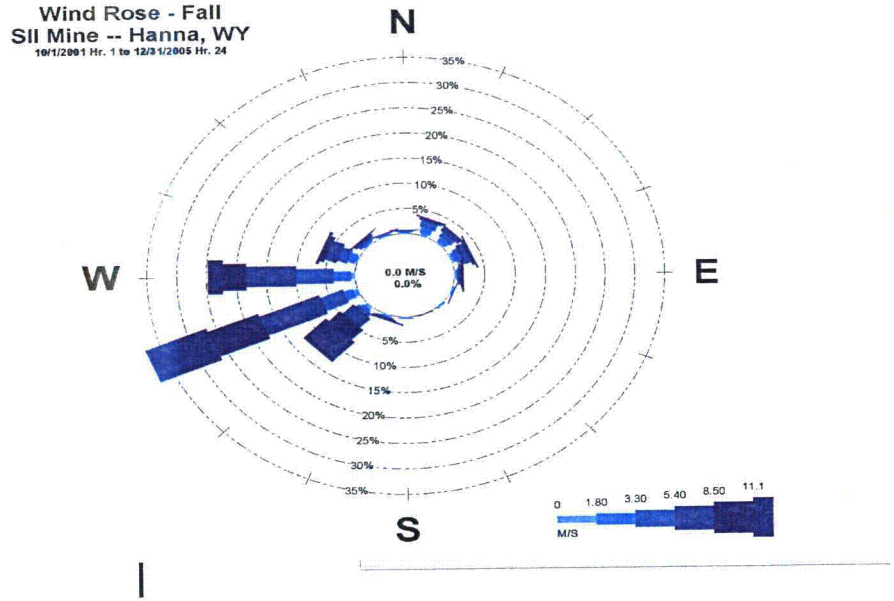
Figure 3.6-16. Seminoe II Mine Wind Speed Diurnal Distribution



The Joint Frequency Distribution in Table 3.6-7 is included for the Seminoe II Mine site. The distributions show the frequencies of average wind speed for each direction based on stability class. Nearly seventy percent of all winds at Seminoe II Mine fall into stability class D which represents near neutral to slightly unstable conditions. The light winds which accompany stable environments can be seen by the stability class F summaries (stable) as the site has no wind speed averages greater than 6 knots (6.9 mph). In addition, the low percentage (5.5%) of occurrence of class F shows the region is rarely exposed to extremely stable environments.







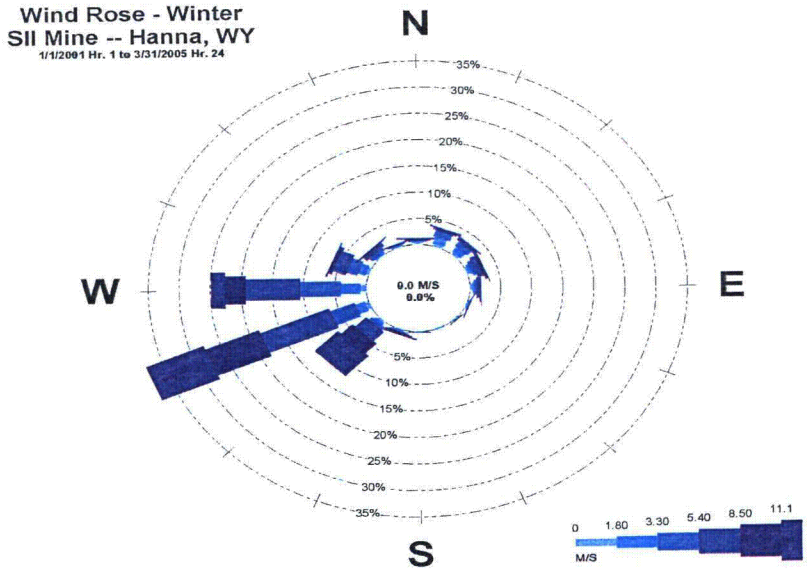


Figure 3.6-17 Seminoe II Seasonal Wind Roses

Table 3.6-6 Seminoe II

Seminoe II Mine

Wind Data Summary

1/1/2001 - 12/31/2005

Hourly Data

	Average	Max	Min
Wind Speed (m/sec)	6.55	22.90	-
Sigma Theta (°)	12.74	81.10	-
Wind Direction			
N	4.05	18.51	-
NNE	3.82	12.07	0.38
NE	4.00	11.77	0.20
ENE	5.37	13.92	0.50
E	5.83	17.25	0.15
ESE	4.37	15.31	0.19
SE	3.13	14.69	0.16
SSE	2.96	12.48	0.24
S	3.83	16.79	0.01
SSW	5.50	16.57	0.17
SW	8.64	22.40	0.13
WSW	8.23	22.90	0.30
W	6.23	21.40	0.26
WNW	5.36	21.51	0.40
NW	5.15	15.31	0.30
NNW	4.04	19.12	0.10

ominant wind direction was from the WSW sector, accounting for 30.1%
winds, the average wind direction was 263°.

Data Recovery

	Possible (hours)	Reported (hours)	Recovery
Wind Speed	43824	41020	93.60%
Sigma Theta	43824	41020	93.60%
Wind Direction	43824	41020	93.60%

Figure 3.6-18 Seminoe II Mine Wind Speed Distribution for 2001 - 2005

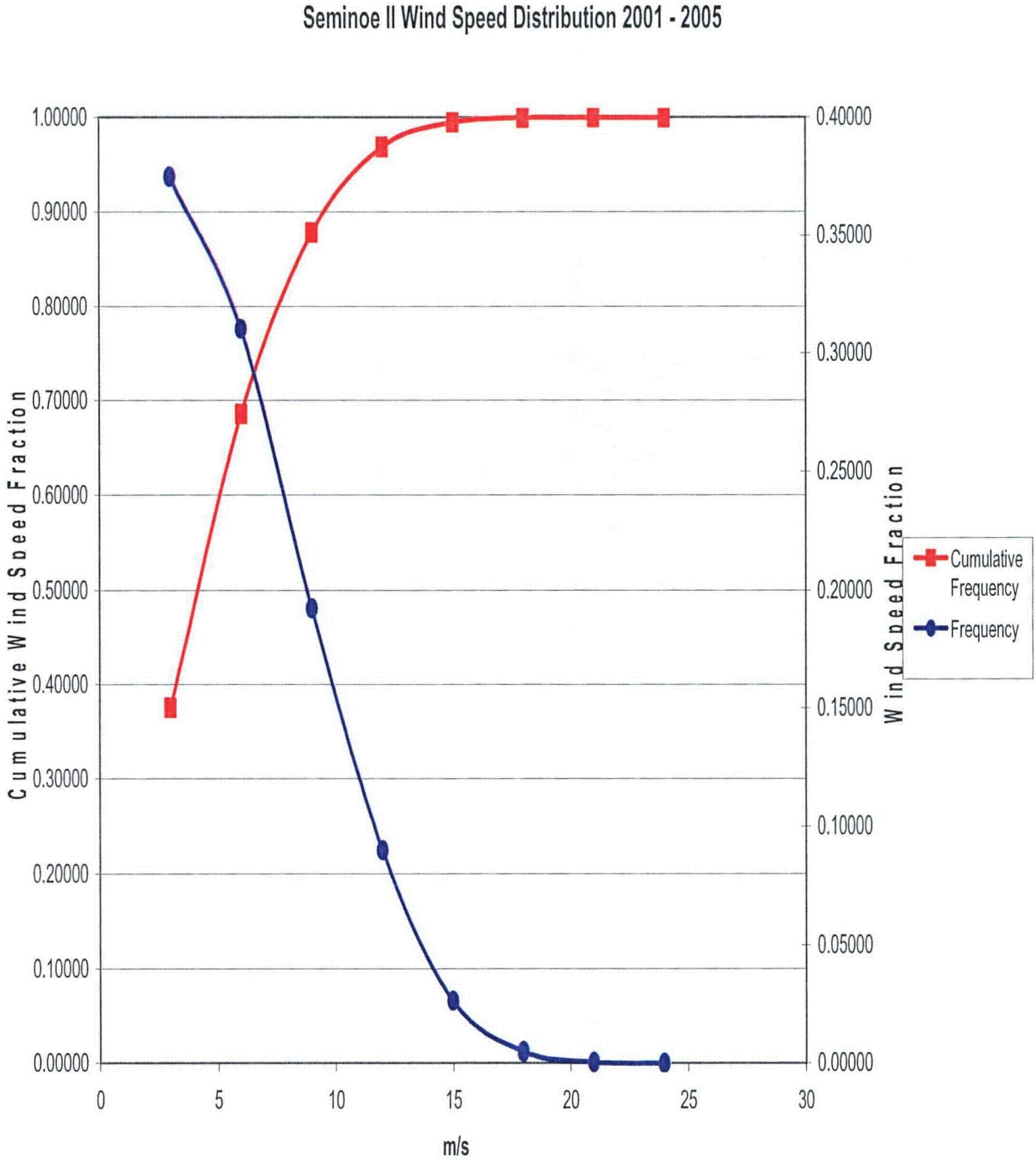


Table 3.6-7 Seminoe II Joint Frequency Distribution

Seminoe II Mine
Hanna, WY

Hourly Average Wind Speed, Wind Direction and Sigma

IML Air Science
Sheridan, WY

Calm Readings 101 Total Readings 40998 Possible Readings 43824 Data Capture 93.6%

From 1/1/2001 To 12/31/2005

Stability Class A **Wind Speed (Knots)**

Direction	< 3	3 - 6	6 - 10	10-16	16 - 21	> 21	Row Total
E	0.00076	0.00137	0.00068	0.00022			0.00303
ENE	0.00097	0.00156	0.00090	0.00010			0.00353
ESE	0.00115	0.00124	0.00046	0.00012			0.00297
N	0.00048	0.00100	0.00056	0.00012	0.00002		0.00219
NE	0.00061	0.00144	0.00066	0.00007		0.00002	0.00281
NNE	0.00064	0.00166	0.00029	0.00002			0.00261
NNW	0.00028	0.00080	0.00083	0.00007	0.00002		0.00201
NW	0.00056	0.00088	0.00161	0.00061	0.00002		0.00368
S	0.00076	0.00098	0.00041	0.00020	0.00005		0.00240
SE	0.00089	0.00088	0.00034	0.00007			0.00218
SSE	0.00069	0.00061	0.00029	0.00007		0.00002	0.00169
SSW	0.00104	0.00110	0.00076	0.00041	0.00002		0.00334
SW	0.00135	0.00190	0.00154	0.00073	0.00005	0.00002	0.00559
W	0.00104	0.00224	0.00341	0.00173			0.00843
WNW	0.00069	0.00083	0.00324	0.00134	0.00002		0.00613
WSW	0.00148	0.00244	0.00276	0.00102	0.00002		0.00772
Sum	0.01339	0.02093	0.01876	0.00693	0.00024	0.00007	0.06032

Table 3.6-7 Seminoe II Mine Joint Frequency Distribution (Continued)

Stability Class B **Wind Speed (Knots)**

Direction	< 3	3 - 6	6 - 10	10-16	16 - 21	> 21	Row Total
E	0.00018	0.00046	0.00056	0.00022			0.00142
ENE	0.00020	0.00066	0.00051	0.00012			0.00150
ESE	0.00015	0.00027	0.00017	0.00017	0.00002		0.00079
N	0.00005	0.00005	0.00010	0.00007			0.00027
NE	0.00010	0.00039	0.00027	0.00005			0.00081
NNE	0.00008	0.00029	0.00020	0.00017	0.00005		0.00078
NNW	0.00008	0.00010	0.00037	0.00032			0.00086
NW		0.00022	0.00041	0.00088	0.00002	0.00002	0.00156
S	0.00005	0.00005	0.00015	0.00012			0.00037
SE	0.00015	0.00010	0.00017	0.00005	0.00002		0.00049
SSE	0.00005	0.00007	0.00002				0.00015
SSW	0.00018	0.00017	0.00015	0.00029	0.00010	0.00005	0.00093
SW	0.00031	0.00056	0.00088	0.00129	0.00027		0.00331
W	0.00023	0.00059	0.00178	0.00520	0.00107	0.00005	0.00891
WNW	0.00008	0.00034	0.00163	0.00234	0.00037	0.00002	0.00478
WSW	0.00020	0.00088	0.00173	0.00315	0.00051	0.00007	0.00655
Sum	0.00209	0.00520	0.00910	0.01444	0.00244	0.00022	0.03348

Table 3.6-7 Seminoe II Mine Joint Frequency Distribution (Continued)

Stability Class C **Wind Speed (Knots)**

Direction	< 3	3 - 6	6 - 10	10-16	16 - 21	> 21	Row Total
E		0.00041	0.00071	0.00083	0.00015	0.00002	0.00212
ENE	0.00018	0.00061	0.00100	0.00051	0.00012		0.00242
ESE	0.00008	0.00017	0.00020	0.00068	0.00002		0.00115
N	0.00005	0.00012	0.00022	0.00020	0.00002		0.00061
NE	0.00013	0.00107	0.00078	0.00010			0.00208
NNE	0.00015	0.00071	0.00046	0.00017	0.00002		0.00152
NNW	0.00005	0.00012	0.00027	0.00051	0.00010		0.00105
NW	0.00003	0.00007	0.00063	0.00159	0.00029	0.00010	0.00271
S	0.00005	0.00005	0.00022	0.00010	0.00005		0.00047
SE	0.00008	0.00015	0.00010	0.00015			0.00047
SSE	0.00008	0.00002	0.00010	0.00015		0.00002	0.00037
SSW	0.00005	0.00010	0.00022	0.00059	0.00068	0.00012	0.00176
SW	0.00020	0.00078	0.00088	0.00268	0.00268	0.00061	0.00784
W	0.00028	0.00146	0.00312	0.01000	0.00702	0.00498	0.02687
WNW	0.00003	0.00046	0.00112	0.00361	0.00139	0.00056	0.00717
WSW	0.00013	0.00190	0.00381	0.01161	0.00832	0.00310	0.02886
Sum	0.00155	0.00822	0.01383	0.03347	0.02088	0.00951	0.08746

Table 3.6-7 Seminoe II Mine Joint Frequency Distribution (Continued)

Stability Class D **Wind Speed (Knots)**

Direction	< 3	3 - 6	6 - 10	10-16	16 - 21	> 21	Row Total
E	0.00028	0.00156	0.00461	0.01095	0.00646	0.00227	0.02613
ENE	0.00013	0.00220	0.00741	0.01642	0.00632	0.00144	0.03391
ESE	0.00013	0.00078	0.00129	0.00227	0.00134	0.00078	0.00659
N	0.00023	0.00105	0.00246	0.00256	0.00090	0.00049	0.00769
NE	0.00056	0.00581	0.00895	0.01002	0.00198	0.00015	0.02746
NNE	0.00036	0.00495	0.00788	0.00585	0.00178	0.00020	0.02102
NNW	0.00005	0.00063	0.00185	0.00234	0.00046	0.00022	0.00556
NW	0.00013	0.00056	0.00410	0.00607	0.00207	0.00117	0.01410
S	0.00005	0.00022	0.00090	0.00080	0.00037	0.00041	0.00276
SE	0.00008	0.00046	0.00083	0.00056	0.00051	0.00007	0.00252
SSE	0.00013	0.00029	0.00066	0.00046	0.00010	0.00002	0.00166
SSW	0.00013	0.00061	0.00173	0.00366	0.00249	0.00195	0.01057
SW	0.00023	0.00198	0.00666	0.02105	0.02044	0.03512	0.08548
W	0.00087	0.01837	0.03844	0.05203	0.02366	0.01815	0.15151
WNW	0.00071	0.00754	0.00920	0.01534	0.00571	0.00422	0.04271
WSW	0.00061	0.00793	0.02793	0.07435	0.05949	0.07181	0.24211
Sum	0.00466	0.05493	0.12491	0.22474	0.13408	0.13847	0.68179

Table 3.6-7 Seminoe II Mine Joint Frequency Distribution (Continued)

Stability Class	E	Wind Speed (Knots)			
E		0.00041	0.00078	0.00144	0.00263
ENE		0.00046	0.00149	0.00185	0.00380
ESE		0.00033	0.00068	0.00037	0.00138
N		0.00025	0.00098	0.00129	0.00252
NE		0.00069	0.00302	0.00459	0.00830
NNE		0.00053	0.00459	0.01017	0.01529
NNW		0.00033	0.00039	0.00076	0.00148
NW		0.00051	0.00061	0.00151	0.00263
S		0.00010	0.00024	0.00027	0.00061
SE		0.00023	0.00044	0.00015	0.00081
SSE		0.00013	0.00010	0.00012	0.00035
SSW		0.00031	0.00049	0.00044	0.00123
SW		0.00051	0.00146	0.00132	0.00329
W		0.00112	0.00763	0.00832	0.01707
WNW		0.00089	0.00456	0.00498	0.01043
WSW		0.00084	0.00373	0.00468	0.00926
Sum		0.00764	0.03120	0.04225	0.08108

Table 3.6-7 Seminoe II Mine Joint Frequency Distribution (Continued)

Stability Class F **Wind Speed (Knots)**

Direction	< 3	3 - 6	6 - 10	10-16	16 - 21	> 21	Row Total
E	0.00122	0.00122					0.00244
ENE	0.00204	0.00161					0.00365
ESE	0.00125	0.00085					0.00210
N	0.00140	0.00156					0.00296
NE	0.00219	0.00234					0.00453
NNE	0.00188	0.00222					0.00410
NNW	0.00158	0.00139					0.00297
NW	0.00191	0.00105					0.00296
S	0.00102	0.00093					0.00195
SE	0.00115	0.00076					0.00190
SSE	0.00081	0.00073					0.00155
SSW	0.00191	0.00120					0.00310
SW	0.00219	0.00193					0.00412
W	0.00349	0.00315					0.00663
WNW	0.00242	0.00207					0.00449
WSW	0.00313	0.00329					0.00642
Sum	0.02958	0.02629					0.05587

Table 3.6-8 Seminoe II vs. Sweetwater Uranium Project Temperatures

	Seminoe II Mine (2001-2006)			Sweetwater Uranium Site (1991-1993)		
Month	Seminoe Average Temperature (°F)	Seminoe Avg. Daily Maximum Temperature (°F)	Seminoe Avg. Daily Minimum Temperature (°F)	Sweetwater Average Temperature (°F)	Sweetwater Avg. Daily Maximum Temperature (°F)	Sweetwater Avg. Daily Minimum Temperature (°F)
January	23.8	41.0	4.2	13.3	24.8	1.8
February	21.4	39.7	-2.3	17.3	29.8	4.8
March	30.0	52.7	8.9	31.7	41.5	21.9
April	40.8	62.5	21.2	36.9	47.1	26.8
May	49.9	73.0	29.1	49.6	61.2	38
June	60.5	83.5	39.2	58.0	71.5	44.5
July	70.0	88.7	50.8	59.6	73.5	45.8
August	65.0	84.0	47.5	60.4	75.3	45.4
September	54.8	76.0	34.5	53.2	68.0	38.4
October	42.6	65.7	22.8	42.0	57.3	26.8
November	29.9	50.6	11.1	23.4	33.0	13.9
December	22.4	39.6	2.1	13.9	25.0	2.8
Annual Average	42.6	63.1	22.4	38.3	50.7	25.9

Table 3.6-9 Meteorological instrument locations and specifications for Seminoe II

Seminoe II Parameter	10m tower Instrument	CR 10 Data Logger Range	Accuracy	Lat: 41° 53' 24" Elev. 6,890 ft Long: -106° 32' 24" Threshold	Instrument Height
Wind Speed	RM Young Wind Monitor AQ	0-112 MPH	±0.4 mph or 1% of reading	0.9 mph	10 meters
Wind Dir	RM Young Wind Monitor AQ	0-360°	±3°	1.0 mph	10 meters
Temp	Fenwall Electronics Model 107	-35 ° -50° C	±0.5°	--	2 meters
Precip	Met One 12" tip	Temp:-20° - 50° C	±0.5% @ 0.5 in/hr rate	--	1 meter

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3.7 NOISE

The existing ambient noise in the vicinity of the Antelope and JAB area is dominated by the traffic noise from the Wamsutter-Crooks Gap road and the Bairoil road utilized for surrounding oil and gas operations, uranium exploration, grazing lessees, and recreational users.

There are no occupied housing units in the vicinity of the proposed Project. Open rangeland is the primary land use within and in the surrounding 2.0-mile area. Livestock grazing is the primary use of the rangeland in the Project Areas. Other uses include oil and gas production and minor dispersed recreation. As a result of the remote location of the Project and the low population density of the surrounding area, impact to noise or congestion within the Project area or in the surrounding 2.0-mile area are not anticipated. Additionally, given the maximum increase in population due to migrant workers is insignificant, noise and congestion impacts are not anticipated in Sweetwater or other neighboring counties.

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3.8. HISTORIC, ARCHEOLOGICAL, AND CULTURAL RESOURCES

The information in Section 2.0 provides relevant data concerning the physical, ecological, and social characteristics of the proposed Antelope and JAB License Area (License Area), and the surrounding environs for uranium in situ mining. NUREG-1569 requires discussion of land use in the proposed License Area, and within a 2.0-mile radius surrounding the License Area. This section indicates the nature and extent of present and projected land use and trends in population or industrial patterns. Preliminary data were obtained from several sources followed by field studies to collect on-site data to check land uses. All tables discussed in Section 2.2 are presented at the end of the section.

3.8.1 Antelope Site

Uranium One contracted Jones and Stokes to conduct a Class III cultural resource inventory of the proposed Antelope site of the Antelope and JAB License Area in Sweetwater County, Wyoming. The Antelope site is located approximately 10 miles west of the town of Bairoil, Wyoming. It can be found on the Antelope Reservoir (1961 Photo revised 1981) and Osborne Well (1961 Photo revised 1981) topographic maps. The site is comprised of public lands managed by the Lander Field Office of the Bureau of Land Management (BLM).

The proposed site encompasses approximately 10,535 acres. Approximately 10,418 acres were inventoried for cultural resources in 2007, with the remaining 117 acres to be surveyed early in 2008. Initial disturbance within the project area will consist of exploratory drilling within existing claims to determine the location and extent of ore trends. Uranium One uses a single drill rig during exploration operations.

Because in situ mining has a much smaller impact footprint than conventional surface mining, surface disturbance is reduced to relatively small areas needed for injection wells, extraction wells, processing facilities, and access roads. Surface disturbance associated with the project is expected to consist of a series of well fields and associated infrastructure (power lines, pipelines, and header sites) in each of the 10 development areas, a processing plant (10 acres), and approximately 24 miles of roads (9 miles of improved existing roads and 15 miles of new roads). Assuming a working right-of-way of 25 feet for roads, construction of new roads and the improvement of existing roads would disturb a maximum of 73 acres within the permit area. The Antelope site could potentially disturb a maximum of 1,162 noncontiguous acres, or approximately 11% of the total acreage within the permit area. All disturbed areas will be reclaimed when the well fields are retired.

A file search (#19374) was conducted with the Wyoming State Historic Preservation Office (SHPO) for the 20 sections in T26N R92W. Results from that search revealed 13 unique

inventories covering 40 acres in the sections of interest. The previous inventories were associated with well pads (five), power lines (three), seismic lines (two), and one each with a pipeline, a road, and a range improvement project. A second file search (#19840) conducted for the eight sections of interest in T26N R93W revealed 10 unique inventories. Four of these were related to a single power line, two were for road projects, two were associated with the development of a uranium mine, one was for a pipeline, and another was for a seismic line.

No archaeological sites are reported from the sections in T26N R92W. A single isolated find, a Late Archaic dart point was reported. Based on the results of previous studies, the potential for cultural resources in this area is considered low. However, it should be noted than less than two-tenths of 1% of this area had been inventoried prior to this study.

Three sites are considered significant under Criteria D, and are therefore potentially eligible for listing on the National Register of Historic Places (NRHP). The other sites are not considered significant because they are small in areal extent, lack features, and exhibit poor integrity.

The Class III Cultural Resource Inventory for the Antelope site in Appendix B contains information that falls under the confidentiality requirement for archeological resources under the National Historic Preservation Act, Section 304 (16 U.S.C. 470w-3(a)). The report, including Wyoming Cultural Resource Forms, has also been submitted to WSHPO for concurrence and the WDEQ-LQD under a separate cover from ARCADIS U.S. The Wyoming Cultural Resource Forms are not included in Appendix B since these forms were not provided to the client due to disclosure restrictions in the NHPA Section 304. Accordingly, disclosure is specifically exempted by statute as specified in 10 CFR §2.390(a)(3). Therefore, Uranium One requests that all applicable portions of Appendix A remain "CONFIDENTIAL" for the purpose of Public Disclosure of this application. Each page of the protected cultural resource information has been marked as follows:

Confidential Information Submitted under 10 CFR 2.390

The cover page for Appendix B has been marked with a more detailed statement, as follows:

Confidential Information Submitted under 10 CFR 2.390
Disclosure is Limited Under the National Historic Preservation Act, Section 304 (16 U.S.C. 470w-3(a)).

3.8.2 JAB Site

Uranium One contracted ARCADIS U.S., Inc. (ARCADIS) to conduct a Class III cultural resource inventory of the proposed JAB site of the Antelope and JAB License Area in Sweetwater County, Wyoming. The site area can be found on the Antelope Reservoir (1983)

and Osborne Draw (1988) USGS 7.5' topographic quadrangles (Appendix B). The site area encompasses 4,040 acres within Sections 9, 10, 13, 14, 15, 16, 17, 20, 21, 22, 23, and 24, T26N, R94W. The surface and minerals are administered by the Lander Field Office of the Bureau of Land Management (LFO BLM).

Approximately 2,080 acres of the site were previously surveyed in 1982. Portions of the previously surveyed areas within the site were re-inventoried at the request of the BLM, Lander Field Office, because the LFO BLM wanted to sample areas of high site probability within the previously surveyed area. ARCADIS' Buffalo office conducted the field work between August 13 to August 24, 2007, covering a total of 285 previously surveyed acres and 1,960 new surveyed acres. Previous archaeological surveys cover the remaining portions of the site, and those investigations are discussed further in the Background Research section of this report. Project results document 25 archaeological sites and 29 isolated resources. On November 29, 2007, BLM Lander Field Office archaeologist Craig Bromley requested that seven sites identified during the August 2007 inventory work undergo limited testing to determine potential for subsurface cultural resources. Seven previously recorded sites were shovel tested between June 16 and June 17, 2008, to determine potential for subsurface cultural resources. Five of the seven previously recorded sites did not contain subsurface cultural resources and are recommended not eligible for the NRHP. Two previously recorded sites contained subsurface cultural resources and are recommended eligible for the NRHP. An addendum to the August 2007 Class III inventory for this work is presented in Appendix B.

ARCADIS U.S., Inc. holds Special Use Permit 332-WY-SR06 (expires June 11, 2008) to conduct cultural resource studies on Public lands in Wyoming administered by the BLM. Adam Graves served as Principal Investigator. Ardeth Halm and Teresa Matson were the Crew Chiefs. Crew persons were Cyrena Undem and Brent Slensker. All field notes and records are on file at ARCADIS in Buffalo, Wyoming.

This investigation was carried out in accordance with policies and regulations implementing Section 106 of the National Historic Preservation Act of 1966 (Public Law 89-665). The cultural resource inventory was undertaken to locate, identify, and document cultural resources that might be affected within the proposed undertaking, and to provide recommendations of eligibility to the National Register of Historic Places (NRHP) as specified in Title 36 of Codes of Federal Regulations (36CFR60.4). NRHP eligibility is evaluated in terms of the integrity of the resource, and: (a) its association with significant events, or patterns in history or prehistory; (b) its association with the specific contributions of individuals significant in our past; (c) its engineering, artistic, or architectural values; or (d) its information potential for important research questions in history or prehistory (National Park Service 1998).

The implementing regulations of Section 106 state that, "The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties" (36CRF800.1b). Therefore, the management recommendations made by A.RCADIS archaeologists focus primarily on the potential of the undertaking to pose an adverse effect to historic properties, as defined in 36CFR800.5.

The Class III Cultural Resource Inventory for the JAB site in Appendix B contains information that falls under the confidentiality requirement for archeological resources under the National Historic Preservation Act, Section 304 (16 U.S.C. 470w-3(a)). The report, including Wyoming Cultural Resource Forms, has also been submitted to WSHPO for concurrence and the WDEQ-LQD under a separate cover from ARCADIS U.S. The Wyoming Cultural Resource Forms are not included in Appendix B since these forms were not provided to the client due to disclosure restrictions in the NHPA Section 304. Accordingly, disclosure is specifically exempted by statute as specified in 10 CFR §2.390(a)(3). Therefore, Uranium One requests that all applicable portions of Appendix B remain "CONFIDENTIAL" for the purpose of Public Disclosure of this application. Each page of the protected cultural resource information has been marked as follows:

Confidential Information Submitted under 10 CFR 2.390

The cover page for Appendix B has been marked with a more detailed statement, as follows:

Confidential Information Submitted under 10 CFR 2.390
Disclosure is Limited Under the National Historic Preservation Act, Section 304 (16 U.S.C. 470w-3(a)).