ECOLOGY FIELD STUDY REPORT
PROPOSED SITE FOR THE
EAGLE ROCK ENRICHMENT FACILITY
BONNEVILLE, IDAHO

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1.0 INTRODUCTION

An ecological field survey was conducted on the proposed site for the Eagle Rock Enrichment Facility (EREF) during the week of June 1, 2008. The purpose of this field study was to collect site-specific ecological resource data at the proposed EREF site. The data was used to characterize the ecological communities on the proposed site including vegetation and animal species. In addition, the inventory was conducted to determine the presence/absence of threatened and endangered species habitat, wetland and riparian habitat, and other sensitive habitats.

2.0 METHODS

Vegetation characteristics were quantified using the point-intercept method on the proposed EREF. Thirty-two sample points were randomly located in the field within the sagebrush steppe and seeded crested wheatgrass vegetation types (**Figure 1**). Two, 50-m (164-ft) tapes were extended perpendicularly from the random point; one oriented to the south, the other oriented to the east. Ground cover (i.e. live vegetation by species, bare ground, litter, and rock) was recorded at each point. Cover data were analyzed to estimate species composition and live plant cover.

Animal presence and abundance were determined using line transects and point counts. Line transects were walked in sagebrush and seeded crested wheatgrass vegetation types 30 minutes before sunrise to 1.5 hours after sunrise. Transects were at least 0.4 km (0.25 mi) apart (**Figure 1**). Species composition and relative abundance were determined based on visual observations of animals, signs (e.g., tracks, scat, nests, burrows), and vocalizations. Gender and age (i.e., juvenile and adult) were noted when possible. Behavior also was noted (e.g., in flight, territorial establishment, nesting, perching). Similarly, point counts were conducted in the irrigated crop fields and sampled during the same time of day as line transects (**Figure 1**).

Potential threatened and endangered plant and animal species were identified by searching the U.S. Fish and Wildlife Service (USFWS) and the Idaho Department of Fish and Game (IDF&G) data bases for Bonneville and surrounding counties. In addition, the Bureau of Land Management (BLM) sensitive species list was reviewed. Habitat used by these species was also identified. [NOTE: USFWS, in a letter to AREVA, confirmed that habitat and presence of threatened and endangered species is unlikely in the area.] Aerial photographs, soil maps, and topographic maps were reviewed to identify potential habitat for protected species. In addition, these maps were also reviewed to identify potential riparian, wetland, and other sensitive habitats. The proposed EREF site was traversed by walking and by using an all-terrain vehicle (ATV). Drainages, moist areas, and other features identified during reviews of maps and aerial photographs were inspected during the field survey. Presence of sensitive and protected plants and animals and their habitat was also noted, if identified, evaluated during vegetation sampling and during the wildlife surveys (line transects and avian point counts).

3.0 RESULTS

3.1 VEGETATION

Three vegetation types were identified on the EREF: sagebrush steppe, seeded crested wheatgrass, and irrigated crops (**Figure 1**). Sagebrush steppe and seeded crested wheatgrass types were sampled for cover. Vegetation was not sampled on the irrigated crop type.

3.1.1 SAGEBRUSH STEPPE

The sagebrush steppe vegetation type of the proposed site is characterized by the dominance of Wyoming big sagebrush (16% cover) and dwarf goldenbush (*Ericameria nana*) (17% cover) (**Table 1**). The community is further characterized by the presence of forbs, shrubs, and grasses that are adapted to the soils of the sagebrush steppe in southeastern Idaho.

Total plant cover for the sagebrush steppe type at the proposed site was approximately 60%. Grasses contributed approximately 20% ground cover and shrubs contributed approximately 34% ground cover. Forbs contributed approximately 6% cover. The largest contributor to vegetation cover was dwarf goldenbush with approximately 17% cover, followed by Wyoming big sagebrush with approximately 16% cover. The next two largest contributors were Sandberg bluegrass (*Poa secunda*) with approximately 11% cover and cheatgrass (*Bromus tectorum*) with approximately 4% cover.

Relative cover is the fraction of total vegetation cover that is composed of a certain species or category of plants. Perennial grasses accounted for 33% of the relative cover, forbs accounted for 10% of the relative cover, and shrubs accounted for 57% of the relative cover.

Density board measurements were conducted to estimate the vertical cover and vegetation structure as an index of wildlife cover or concealment. Field survey results indicated that wildlife cover in the sagebrush community decreased with increasing height. Maximum wildlife cover ranged from 91% at a height range of 0-0.1 m (0 – 3.9 in) to 3% at a height range of 0.7-0.8 m (27.5 – 31.5 in). The average maximum vegetation height in the sagebrush community was approximately 43 cm (17 in), with a standard deviation of 8.8 cm (3.5 in).

3.1.2 SEEDED CRESTED WHEATGRASS

The seeded crested wheatgrass vegetation type is characterized by the dominance of crested wheatgrass (34% cover) and cheatgrass (12% cover) (**Table 2**). The community is further characterized by the presence of forbs, shrubs, and other grasses that have colonized these mechanically disturbed sites.

The total plant cover for the seeded crested wheatgrass type was approximately 55%. Grasses dominated this community and contributed approximately 47.5% ground cover. Shrubs contributed approximately 0.5% ground cover, and forbs contributed approximately 7% cover. The largest contributor to vegetation cover was crested wheatgrass with approximately 34% cover, followed by cheatgrass with approximately 12% cover. The next two largest contributors were bur buttercup (*Ranunculus testiculatus*) with approximately 5% cover and Sandberg bluegrass with approximately 2% cover.

Three shrub species were recorded on vegetation transects within the seeded crested wheatgrass type. Shrubs comprised only trace amounts of the total vegetation cover. Wyoming big sagebrush, rubber rabbitbrush (*Chrysothamnus nauseosa*), and dwarf goldenbush were all recorded in the seeded crested wheatgrass type, each representing less than 0.5% cover. Perennial grasses account for 87% of the relative cover, forbs accounted for 12% of the relative cover, and shrubs accounted for 1% of the relative cover.

Density board measurements were also conducted in the seeded crested wheatgrass type to estimate the vertical cover and vegetation structure as an index of wildlife cover or concealment. Field survey results indicate that wildlife cover in the seeded crested wheatgrass type was very low above 0.2 m (8 in). Maximum wildlife cover ranged from 64% at a height range of 0-0.1 m (0–3.9 in) to 1% at a height range of 0.2-0.3 m (8–12 in). The average maximum vegetation height in the non-irrigated seeded pasture community was approximately 16.5 cm (6.5 in), with a standard deviation of 1.5 cm (0.6 in).

3.2 WILDLIFE

Animal species, identified during transect and point sampling, are listed in **Tables 3**, **4**, and **5**. Most animals identified were birds, although some mammals were also observed. Additional species were observed incidentally including herptiles (reptiles and amphibians).

Sagebrush steppe vegetation supported the most diverse bird community. A total of 17 bird species were positively identified in the sagebrush community. The most common bird species encountered in the sagebrush community during avian transect surveys included the horned lark (49.1% of the total number of birds observed), Brewer's sparrow (*Spizella breweri*) (15.4% of the total number of birds observed), and western meadowlark (13.6% of the total number of birds observed) (**Table 3**). Other birds commonly encountered included the sage thrasher, vesper sparrow (*Pooecetes gramineus*), mourning dove (*Zenaida macroura*), and northern harrier.

A total of 9 bird species were positively identified in the seeded crested wheatgrass vegetation type. The most common bird species encountered included horned lark (68.2% of the total number of birds observed), Brewer's sparrow (12.9% of the total number of birds observed), and western meadowlark (9.4% of the total number of birds observed) (**Table 4**). The only other bird species commonly encountered was the vesper sparrow.

A total of 5 bird species were positively identified in the irrigated crop vegetation type. The most common species encountered during avian point-count surveys included the horned lark (54.8% of the total number of birds observed), meadowlark (12.9% of the total number of birds observed), northern harrier (12.9% of the total number of birds observed), and long-billed curlew (*Numenius americanus*) (12.9% of the total number of birds observed) (**Table 5**). The only other bird species encountered was the mourning dove.

Several mammal species were identified during transect and point count samples and through incidental observations. Most observations were associated with sagebrush steppe vegetation (**Appendix A**). Sign of pronghorn (*Antiliocapra americana*), black-tailed jackrabbits (*Lepus californicus*), coyote (*Canis latrans*), badgers (*Taxidea taxis*), and rodents were observed during transect sampling. Pronghorn (observed as single individuals during the June 2008 survey), and black-tailed jackrabbits were observed incidentally during the June field surveys. In addition, three white-tailed deer (*Odocoileus virginianus*) and a group of about eight pronghorn were observed in May.

No herptiles were observed during transect sampling. However, one short-horned lizard (*Phrynosoma douglassi*) was observed in the sagebrush steppe vegetation and one tiger salamander (*Ambystoma* tigrinum) was incidentally observed near the potato cellars at the south end of the proposed site.

3.3 SENSITIVE HABITATS

Maps, soils surveys, and aerial photographs were reviewed to identify potential sensitive habitats. No cliffs, open water (e.g., rivers, lakes), or forested areas were identified on the proposed site or within 8 km (5 mi) of the proposed site. No wetland or riparian areas were identified from the maps and records. One drainage, running from one of the irrigated crop fields to the south boundary of the proposed site, was identified for visual inspection. The drainage was walked and driven from the crop field to the south boundary. No wetlands, moist meadows, riparian areas or other sensitive habitats were observed along the drainage. Similarly, no sensitive habitats were identified during the reconnaissance of the remainder of the proposed site.

3.4 PROTECTED AND SENSITIVE SPECIES

3.4.1 PROTECTED AND SENSITIVE PLANTS

Three plant species were identified as potentially being present on the proposed site. One threatened plant species, Ute ladies' tresses (*Spiranthes diluvialis*) has been observed in Bonneville County and had a potential to be present on the proposed site. Two sensitive plant species, red glasswort (*Salicornia rubra*) and earth lichen (*Catapyrenium congestum*) also were considered as potentially being present on the site based on a literature and records review.

Searches were conducted for the three plant species and their habitat during the site reconnaissance, inspection of the on-site drainage, and during vegetation sampling. Ute ladies' tresses is associated with moist meadow and wetland habitats. Red glasswort is associated with moist, saline or alkaline soil of flats, shores, seepage areas, and ditches. Earth lichen (*Catapyrenium congestum*) is associated with shadscale and sagebrush steppe association, but is restricted to barren, slightly natric (i.e., salt affected soil) sites on inland sand dune systems. None of these plant species or habitat required for these species was observed on the proposed site.

3.4.2 PROTECTED AND SENSITIVE ANIMALS

Five animal species that are protected, candidate, or sensitive were identified as potentially being in the area. The lynx (*Lynx canadensis*) is the only protected animal species identified as potentially being present in Bonneville County. Lynx are typically associated with boreal forest areas. It is unlikely that lynx would be found on this site, although the Greater Yellowstone area [over 160 km (100 mi) east of the site] is under consideration as critical habitat for this species. The yellow-billed cuckoo (*Coccyzus americanus*), a candidate species, has been identified in Bingham County. Habitat for the cuckoo, a migrant that winters in South America, is open woodlands with clearings and dense scrubby vegetation, often along water. It is unlikely that cuckoos would use this site since there is no woodland or riparian habitat on or in close proximity to the site.

Three sensitive species associated with big sagebrush habitat, ferruginous hawk (*Buteo regalis*), pygmy rabbit (*Brachylagus idahoensis*), and greater sage grouse (*Centrocercus urophasianus*) are known in the region. The site and surrounding areas are big sagebrush habitat, which is used by these species. This habitat is primarily found in the western portion of the site. No sign or sightings of ferruginous hawks or pygmy rabbits were observed during the survey. No greater sage grouse were heard or observed during the June survey, although sign (droppings) were observed in three locations within the sagebrush steppe vegetation.

Table 1 Sagebrush Steppe Vegetative Cover on the Proposed Eagle Rock Enrichment Facility Site

SCIENTIFIC NAME	COMMON NAME	COVER (%)
Ericameria nana	Dwarf goldenbush	17.00
Artemisia tridentata var. wyomingensis	Wyoming big sagebrush	16.00
Poa secunda	Sandberg bluegrass	11.00
Bromus tectorum	Cheatgrass	4.00
Hordeum jubatum	Foxtail barley	3.00
Phlox longifolia	Longleaf phlox	2.00
Descurania sophia	Tansymustard	1.00
Elymus lanceolatus	Thickspike wheatgrass	1.00
Phlox hoodii	Hood's phlox	0.60
Agropyron cristatum	Crested wheatgrass	0.60
Lappula occidentalis	Flatspine stickseed	0.50
Erigeron pumilus	Shaggy fleabane	0.40
Lomatium dissectum	Desert parsley	0.30
Schoencrambe linifolia	Flaxleaf plainsmustard	0.30
Artemisia tripartita	Threetip sagebrush	0.30
Arabis lignifera	Desert rockcress	0.20
Opuntia polyacantha	Prickly pear	0.20
Astragalus curvicarpus	Curvepod milkvetch	0.20
Cryptantha interrupta	Bristly cryptantha	0.10
Crepis accuminata	Hawksbeard	0.10
Allium textile	Textile onion	0.10
Atriplex nuttallii	Nutall's saltbush	0.10
Krascheninnikovia lanata	Winterfat	0.09
Elymus elymoides	Squirreltail	0.09
Lepidium sp.	Pepperwort	0.09
Castilleja sp.	Indian paintbrush	0.07
Chenopodium leptophyllum	Slimleaf goosefoot	0.04
Oryzopsis hymenoides	Indian ricegrass	0.04
Packera cana	Woolly groundsel	0.02
Delphinium andersonii	Anderson's larkspur	0.02
Oenethera caespitosa	Desert evening-primrose	0.02
Hesperostipa comata	Needle and thread	0.02
Sphaeralcea munroana	Orange globemallow	0.02
Rununculus testiculatus	Bur buttercup	0.02
OTHER		
Bare Ground		23.00
Rock		3.00
Litter		11.00
Moss		2.00
Total[1]		**98.54**

[1]Note: Total cover equals less than 100% due to rounding.

Table 2 Seeded Crested Wheatgrass Vegetative Cover on the Proposed Eagle Rock Enrichment Facility Site

SCIENTIFIC NAME	COMMON NAME	COVER (%)
Agropyron cristatum	Crested wheatgrass	33.60
Bromus tectorum	Cheatgrass	11.90
Rununculus testiculatus	Bur buttercup	5.00
Poa secunda	Sandberg bluegrass	1.90
Agoseris glauca	False dandelion	0.80
Erigeron Pumilus	Shaggy flebane	0.41
Artemisia tridentata var. *wyomingensis*	Wyoming big sagebrush	0.18
Chrysothamnus nauseosa	Rubber rabbitbrush	0.18
Ericameria nana	Dwarf goldenbush	0.18
Medicago sativa	Alfalfa	0.14
Descurania sophia	Tansymustard	0.14
Tragopogon dubius	Goat's beard	0.09
Hordeum jubatum	Foxtail barley	0.05
Phlox hoodii	Hood's phlox	0.05
Lappula occidentalis	Flatspine stickseed	0.05
Packara cana	Woolley groundsel	0.05
Cirsium arvense	Canada thistle	0.05
OTHER		
Bare Ground		28.00
Litter		16.40
Rock		0.68
Moss		0.09
Total[1]		**99.94**

[1] Note: Total cover equals less than 100% due to rounding.

Table 3 Wildlife Transect Survey Data Summary for the Proposed Eagle Rock Enrichment Facility Site – Sagebrush Steppe

Species		Total Number[1]	% of Total Number
Horned Lark	*Eremophila alpestris*	137	49.1
Western Meadowlark	*Sturnella neglecta*	38	13.6
Sage Thrasher	*Oreoscoptes montanus*	18	6.5
Northern Harrier	*Circus cyaneus*	6	2.2
Brewer's Sparrow	*Spizella breweri*	43	15.4
Chipping Sparrow	*Spizella passerina*	0	0.0
Sage Sparrow	*Amphispiza belli*	3	1.1
Vesper Sparrow	*Pooecetes gramineus*	8	2.9
Grasshopper Sparrow	*Ammodramus savannarum*	5	1.8
Mourning Dove	*Zenaida macroura*	6	2.2
Kildeer	*Charadrius vociferus*	0	0.0
Brown-headed Cowbird	*Molothrus ater*	1	0.4
American Crow	*Corvus brachyrhynchos*	1	0.4
Short-earred Owl	*Asio flammeus*	1	0.4
Red-tailed Hawk	*Buteo jamaicensis*	0	0.0
Greater Sage Grouse	*Centrocercus urophasianus*	5	1.8
Long-billed Curlew	*Numenius americanus*	0	0.0
Unknown		7	2.5
Total Birds		**279**	**100**

[1] Note: Includes birds observed, heard, or sign observed (e.g., feathers, nests, roosts)

Table 4 Wildlife Transect Survey Data Summary for the Proposed Eagle Rock Enrichment Facility Site - Seeded Crested Wheatgrass

Species		Total Number[1]	% of Total Number
Horned Lark	*Eremophila alpestris*	58	68.2
Western Meadowlark	*Sturnella neglecta*	8	9.4
Sage Thrasher	*Oreoscoptes montanus*	1	1.2
Northern Harrier	*Circus cyaneus*	1	1.2
Brewer's Sparrow	*Spizella breweri*	11	12.9
Chipping Sparrow	*Spizella passerina*	0	0.0
Sage Sparrow	*Amphispiza belli*	0	0.0
Vesper Sparrow	*Pooecetes gramineus*	3	3.5
Grasshopper Sparrow	*Ammodramus savannarum*	0	0.0
Mourning Dove	*Zenaida macroura*	0	0.0
Killdeer	*Charadrius vociferus*	1	1.2
Brown-headed Cowbird	*Molothrus ater*	1	1.2
American Crow	*Corvus brachyrhynchos*	1	1.2
Short-earred Owl	*Asio flammeus*	0	0.0
Red-tailed Hawk	*Buteo jamaicensis*	0	0.0
Greater Sage Grouse	*Centrocercus urophasianus*	0	0.0
Long-billed Curlew	*Numenius americanus*	0	0.0
Unknown		0	0.0
Total Birds		**85**	**100**

[1] Note: Includes birds observed, heard, or sign observed (e.g., feathers, nests, roosts)

Table 5 Avian Point Survey Data Summary for the Proposed Eagle Rock Enrichment Facility Site- Irrigated Crops

Species		Total	% Observed	Pt 1	Pt 2	Pt 3	Pt 4	Pt 5
Horned Lark	*Eremophila alpestris*	17	**54.8**				10	7
Western Meadowlark	*Sturnella neglecta*	4	**12.9**				1	3
Sage Thrasher	*Oreoscoptes montanus*	0	0.0					
Northern Harrier	*Circus cyaneus*	4	**12.9**	2	1			1
Brewer's Sparrow	*Spizella breweri*	0	0.0					
Chipping Sparrow	*Spizella passerina*	0	0.0					
Sage Sparrow	*Amphispiza belli*	0	0.0					
Vesper Sparrow	*Pooecetes gramineus*	0	0.0					
Grasshopper Sparrow	*Ammodramus savannarum*	0	0.0					
Mourning Dove	*Zenaida macroura*	2	**6.5**		2			
Kildeer	*Charadrius vociferus*	0	0.0					
Brown-headed Cowbird	*Molothrus ater*	0	0.0					
American Crow	*Corvus brachyrhynchos*	0	0.0					
Short-earred Owl	*Asio flammeus*	0	0.0					
Red-tailed Hawk	*Buteo jamaicensis*	0	0.0					
Greater Sage Grouse	*Centrocercus urophasianus*	0	0.0					
Long-billed Curlew	*Numenius americanus*	4	**12.9**	2	1	1		
Unknown		0	0.0					
Total		**31**	**100**	4	4	1	11	11

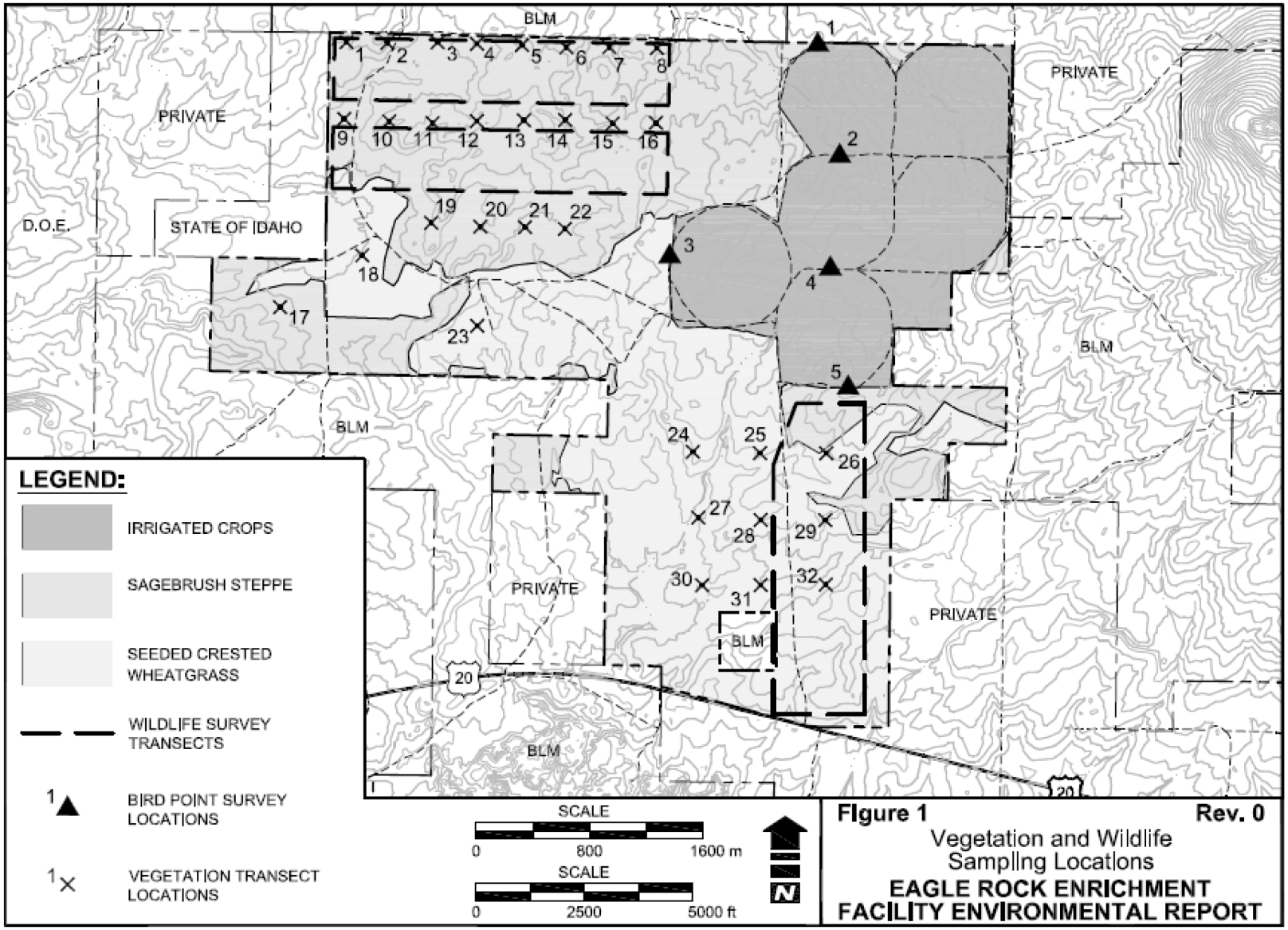

Figure 1 **Rev. 0**

Vegetation and Wildlife Sampling Locations

EAGLE ROCK ENRICHMENT FACILITY ENVIRONMENTAL REPORT

APPENDIX A

JUNE 2008 WILDLIFE TRANSECT SURVEY DATA SUMMARY SHEETS PROPOSED EAGLE ROCK ENRICHMENT FACILITY

Sagebrush Steppe Habitat – June 4, 2008 transects

Species	Heard	Observed	Sign	Comments
Horned lark	5			
Meadow Lark	3			
Sage Thrasher	1			
Northern Harrier				
Brewer sparrow	2			
Chipping sparrow				
Sage sparrow	1			
Vesper sparrow	1			
Grasshopper sparrow	1			
Mourning dove				
Kildeer				
Brown-headed cowbird				
Crow				
Short-earred owl				
Red-tailed hawk				
Sage grouse	1			distant to the west
Unknown				
Long-billed curlew				
Coyote				
Badger				
Pronghorn			1	tracks
White-tailed deer				
Elk (red deer)				
Pygmy rabbit				
Jack rabbit				

Sagebrush Steppe Habitat – June 5, 2008 transects

Species	Heard	Observed	Sign	Comments
Horned lark	11	3		
Meadow Lark				
Sage Thrasher	1			
Northern Harrier				
Brewer sparrow	6	2		
Chipping sparrow				
Sage sparrow				
Vesper sparrow				
Grasshopper sparrow	1			
Mourning dove				
Kildeer				
Brown-headed cowbird				
Crow				
Short-earred owl		1		flushed along transect about 3 m
Red-tailed hawk				
Sage grouse				
Unknown				
Long-billed curlew				
Coyote			1	scat
Badger			2	1 den with fresh sign; 1 old
Pronghorn				
White-tailed deer				
Elk (red deer)				
Pygmy rabbit				
Jack rabbit				

Sagebrush Steppe Habitat – June 6, 2008 transects

Species	Heard	Observed	Sign	Comments
Horned lark	40	13		
Meadow Lark	10	2		
Sage Thrasher		5		
Northern Harrier		4		
Brewer sparrow	7	5		
Chipping sparrow				
Sage sparrow	2			
Vesper sparrow	3			
Grasshopper sparrow	3			
Mourning dove		2		fly over
Kildeer				
Brown-headed cowbird		1		
Crow				
Short-earred owl				
Red-tailed hawk				
Sage grouse			3	clustered near GW-2 (new site)
Unknown		3		
Long-billed curlew				
Coyote			1	scat
Badger				
Pronghorn			2	near GW-2 (old site)
White-tailed deer			1	pellets
Elk (red deer)				
Pygmy rabbit				
Jack rabbit	1			

Sagebrush Steppe Habitat – June 7, 2008 transects

Species	Heard	Observed	Sign	Comments
Horned lark	39	26		
Meadow Lark	20	3		
Sage Thrasher	9	2		
Northern Harrier		2		
Brewer sparrow	18	3		
Chipping sparrow				
Sage sparrow				
Vesper sparrow	2	2		
Grasshopper sparrow				
Mourning dove		4		
Kildeer				
Brown-headed cowbird				
Crow		1		
Short-earred owl				
Red-tailed hawk				
Sage grouse			1	roost in center of transect
Unknown		4		
Long-billed curlew				
Coyote				
Badger			1	Den - fresh
Pronghorn			1	Pellets
White-tailed deer				
Elk (red deer)				
Pygmy rabbit				
Jack rabbit			1	Pellets (based on size) 7-13 mm

Seeded Crested Wheatgrass Habitat – June 4, 2008 transects

Species	Heard	Observed	Sign	Total	Comments
Horned lark	21	37		58	
Meadow Lark	6	2		8	
Sage Thrasher	1			1	
Northern Harrier		1		1	
Brewer sparrow	9	2		11	sage outcrop incursions
Chipping sparrow				0	
Sage sparrow				0	
Vesper sparrow	3			3	
Grasshopper sparrow				0	
Mourning dove				0	
Killdeer	1			1	
Brown-headed cowbird		1		1	overhead in flight
Crow		1		1	overhead in flight
Short-earred owl				0	
Red-tailed hawk				0	
Sage grouse				0	
Unknown				0	
Long-billed curlew				0	
Coyote				0	
Badger				0	
Pronghorn				0	
White-tailed deer				0	
Elk (red deer)				0	
Pygmy rabbit				0	
Jack rabbit				0	
TOTAL	**41**	**44**	**0**	**85**	