# Stand Alone Report 5

## 2012 Baseline Aquatic Resources Inventory
## Upton Plant Site

# Rare Element Resources, Inc.
# 2012 Baseline Aquatic Resources Inventory
# Bear Lodge Project – Upton Plant Site

Submitted to:

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## TABLE OF CONTENTS

D10-2.1 INTRODUCTION .......... IV

D10-2.2 METHODS 1

D10-2.3 RESULTS AND DISCUSSION .......... 2
- D10-2.3.1 Proposed Permit Area Description .......... 2
- D10-2.3.2 NRCS Soil Survey .......... 4
- D10-2.3.3 Waters of the U.S. and Other Waters of the U.S. .......... 4
- D10-2.3.4 Wetlands .......... 5

D10-2.4 CONCLUSION .......... 5

D10-2.5 REFERENCES .......... 7

## LIST OF ADDENDA

Addendum D10-2-A Tables

Table D10-2.1. Summary of Wetlands and OWUS within the Upton Plant Site Study Area and Proposed Permit Area........ 11

Table D10-2.2: Total Wetland and OWUS Acreages within the Proposed Upton Plant Site Permit Area. .......... 13

Addendum D10-2-B Maps

Map: 1 Upton Plant Site 2012 Baseline Aquatic Resources Inventory – 2011 NAIP True Color Imagery

Map: 2 Upton Plant Site 2012 Baseline Aquatic Resources Inventory – 2009 NAIP CIR Imagery

Map: 3 Upton Plant Site 2012 Baseline Aquatic Resources Inventory – 1984 USGS Upton West Quad Topo DRG

Addendum D10-2-C Plant Species List

Addendum D10-2-D Photographs

Addendum D10-2-E Wetland Determination Data Forms

Addendum D10-2-F 2012 Water Quality Data for Coyote Creek and Settling Ponds

Addendum D10-2-G 2012 Wildlife Report

Addendum D10-2-H U.S. Army Corps of Engineers Jurisdictional Determination

## D10-2.1 INTRODUCTION

Rare Element Resources (RER) (Lakewood, Colorado) contracted BKS Environmental Associates, Inc. (BKS) (Gillette, Wyoming) to conduct an aquatic resources inventory for the proposed Bear Lodge Project - Upton Plant Site in June 2012. The purpose of the inventory is to document aquatic resources within the proposed Upton Plant Site Permit Area. Findings were used by RER to obtain jurisdictional determination from the U.S. Army Corps of Engineers, and will be used to obtain a Wyoming Department of Environmental Quality Mine Permit.

The proposed Upton Plant Site Permit Area surveyed in 2012 encompassed approximately 855 acres (referenced within this report as the Upton Plant Site Study Area). However, the Upton Plant Site Permit Area proposed by RER for the Wyoming Mine Permit Application only includes approximately 831.85 acres of the original 855 acre Permit Area (referenced within this report here after as the proposed Upton Plant Site Permit Area). The Upton Plant Site Study Area and proposed Permit Area are located in north-central Weston County approximately two miles west of Upton, Wyoming. Both the Upton Plant Site Study Area and proposed Permit Area include all or portions of Sections 28, 29, 32, and, 33 Township 48 North, Range 65 West.

An aquatic resources inventory was conducted within the Upton Plant Site Study Area on June 28, 2012, by BKS employees K. Wilson and J. Qualm. Maps illustrating the Upton Plant Site Study Area and proposed Permit Area, sample locations, and aquatic resources inventoried within the Upton Plant Site Study Area and proposed Permit Area on 2011 NAIP true color aerial imagery, 2009 NAIP color infra-red (CIR) imagery, and 1984 USGS Upton West Quad DRG are located in Addendum D10-2-B.

## D10-2.2 METHODS

An inventory of aquatic resources was conducted in accordance with the U.S. Army Corps of Engineers (USACE) Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) and Regulatory Guidance Letter No. 05-05 (USACE 2005). All potential Waters of the U.S. (WUS) and other waters of the U.S. (OWUS) were assessed during the aquatic resources inventory. Aquatic resources were inventoried through review of 2011 NAIP true color aerial imagery and pedestrian reconnaissance. The routine wetland delineation approach with onsite inspection was utilized when potential wetlands were observed during field evaluations.

Potential wetlands, WUS, and OWUS were initially identified via review of the following mapping data:

1. U.S. Fish and Wildlife Service (USFWS) digital National Wetland Inventory (NWI) mapping
2. 2011 NAIP True Color Aerial Imagery

No flow data, stream gauge information, or historical information of flow was reviewed or gathered for the purposes of this aquatic resources inventory. Natural Resource Conservation Service (NRCS) soils data was reviewed for general soils information (NRCS 2013).

Water samples were collected at three locations along Coyote Creek for laboratory analysis in March and April of 2012. Samples were also collected from the three sediment ponds located on reclaimed bentonite mining areas. This data is included in Addendum D10-2-F. Wildlife information was also collected and is presented in Addendum 10-2-G.

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. Hydrology and soils were evaluated whenever a plant community met hydrophytic vegetation parameters or whenever indicators suggested the potential presence of a seasonal wetland under normal circumstances. USACE Wetland Determination Data Form- Great Plains Region (Version 2.0) was utilized. Wetland indicator categories were identified for each dominant plant species noted through use of the 2012 National Wetland Plant List – Great Plains Region.

Identification of potential WUS and OWUS was based on review of available true ortho color aerial imagery and onsite assessment of ordinary high water mark (OHWM) indicators. Physical characteristics outlined in USACE Regulatory Guidance Letter No. 05-05 were evaluated whenever true color ortho aerial imagery or onsite inspection indicated the presence of a potential WUS or OWUS. Potential WUS and OWUS boundaries were delineated based on the OWHM and both were annotated as OWUS for the purposes of this report.

Field sample locations and resulting wetland boundaries were recorded with a Garmin GPSmap 60CSx in GCS NAD83. OWUS boundaries were based on estimated widths of OHWM and aerial imagery.

## D10-2.3 RESULTS AND DISCUSSION

### D10-2.3.1 Proposed Permit Area Description

The eastern portion of the Upton Plant Site Study Area is characterized by relatively flat to rolling topography, and the western portion of the Upton Plant Site Study Area is dominated by moderately steep to steep topography broken by multiple small drainages. Elevation ranges from approximately 4,445 feet in the northwest to approximately 4,230 feet around Coyote Creek. Precipitation ranges from 10 to 14 inches per year. The primary land use within the Upton Plant Site Study Area is grazing; however, the northeast portion of the Upton Plant Site Study Area was previously mined for bentonite and is currently reclaimed.

Native vegetation communities occupied approximately 93% of the Upton Plant Site Study Area and included Big Sagebrush Shrubland, Greasewood Shrubland, Meadow Grassland, Mixed Shrubland, and Upland Grassland. Mixed Shrubland was the dominant native vegetation community and occurred on approximately 38% of the Upton Plant Site Study Area. Reclaimed Grassland was the only non-native vegetation community, occupying approximately 5% of the Upton Plant Site Study Area. Disturbed areas account for approximately 1% and water accounted for approximately 0.4% of the Upton Plant Site Study Area.

Dominant shrub species included big sagebrush (*Artemisia tridentata*) and greasewood (*Sarcobatus vermiculatus*). Western wheatgrass (*Elymus smithii*), Sandberg bluegrass (*Poa secunda*), and crested wheatgrass (*Agropyron cristatum*) were the dominant upland perennial grasses. The dominant upland perennial forb species were western yarrow (*Achillea millefolium*), hoods phlox (*Phlox hoodii*), and golden banner (*Thermopsis rhombifolia*). Vegetation within the areas identified as wetlands consisted primarily of foxtail barley (*Hordeum jubatum*), prairie cordgrass (*Spartina pectinata*), common cattail (*Typha latifolia*), common spikerush (*Eleocharis palustris*), and inland saltgrass (*Distichlis spicata*).

Drainages within the Upton Plant Site Study Area are within the Beaver Drainage Basin and generally occur within the Meadow Grassland vegetation community. The western portion of the Upton Plant Site Study Area drains to the west and southwest to Beaver Creek, and the eastern portion of the Upton Plant Site Study Area drains to the east and northeast to Coyote Creek. Coyote Creek occurs in approximately the E ½ of Sections 28 and 33, Township 48 North, Range 65 West, and the SW ¼ of Section 34, Township 48 North, Range 65 West. Beaver Creek is located west of the Upton Plant Site Study Area, and an unnamed tributary of Beaver Creek is located in the SW ¼ of Section 33, Township 48 North, Range 65.

### D10-2.3.2 NRCS Soil Survey

NRCS soil mapping data for Weston County, Wyoming, was utilized for this project. The following NRCS soil mapping units are associated with the drainages within the Upton Plant Site Study Area (USDA 2013):

- Lohmiller-Haverdad complex, 1 to 4 percent slopes
- Orella-Samaday-Rock outcrop complex, 3 to 30 percent slopes
- Pits, bentonite

None of these soil mapping units are classified as hydric soils (USDA NRCS 2013).

### D10-2.3.3 Waters of the U.S. and Other Waters of the U.S.

Coyote Creek flows from north to south across the eastern edge of the Upton Plant Site Study Area. During March and April 2012 water quality sampling, water was present and flowing. Water was present, but no flow was observed during May 2012 vegetation mapping or during the June 2012 aquatic resources inventory. Large portions of Coyote Creek were dry during the June 2012 aquatic resources inventory.

Unnamed drainages flow east from the western portion of the Upton Plant Site Study Area and connect to Coyote Creek. An unnamed drainage within the southwestern portion of the Upton Plant Site Study Area flows south and connects to Beaver Creek outside of the Upton Plant Site Study Area. These ephemeral drainages were dry at the time of the 2012 field surveys, except for the reservoir associated with the man-made dam on one of the unnamed tributaries of Coyote Creek. OHWM were not observed within the unnamed tributaries to Coyote Creek or Beaver Creek.

Reservoirs resulting from reclamation of the previous bentonite mine contained water during the March-May 2012 field surveys. However, water was only present within the southern (W6) and western (W9) reservoirs during the aquatic resources inventory. All three reservoirs were isolated and not connected to Coyote Creek or Beaver Creek.

Approximately 2.13 acres were identified as OWUS within the Upton Plant Site Study Area. Of these acres, approximately 0.88 acres were associated with the reclaimed bentonite mine. Approximately 1.86 acres identified as OWUS occur within the proposed Upton Plant Site Permit Area. Of these acres, approximately 0.61 acres are associated with the reclaimed bentonite mine. The remaining 1.25 acres identified are located within Coyote Creek (Upton Plant Site Study Area and proposed Permit Area). Refer to Tables

D10-1.1 and D10-2.2 for a summary of OWUS within the Upton Plant Site Study Area and proposed Permit Area.

### D10-2.3.4 Wetlands

Approximately 15.00 acres of wetlands were identified within the Upton Plant Site Study Area of which approximately 13.99 acres occur within the proposed Upton Plant Site Permit Area. Approximately 7.93 acres of wetlands identified were found along and within Coyote Creek of which approximately 7.46 acres occur within the proposed Upton Plant Site Permit Area. Approximately 7.54 acres along and within Coyote Creek were classified as Palustrine Emergent (PEM) wetlands of which approximately 7.07 acres occur within the proposed Upton Plant Site Permit Area. The remaining 0.39 acres were classified as Palustrine Unconsolidated Bottom (PUB) wetlands and were found in association with the Coyote Creek channelization (occur within Upton Plant Site Study Area and Permit Area).

Approximately 2.97 acres of PEM wetland were identified in association the man-made impoundments locate along an unnamed tributary of Coyote Creek. A small seep was also identified and encompassed approximately 0.30 acres. Approximately 0.45 acres of PEM wetlands were indentified along the unnamed tributary of Beaver Creek. Both are located within the Upton Plant Site Study Area and proposed Permit Area.

Approximately 3.35 acres of wetlands were identified surrounding the reservoirs resulting from the reclamation of the bentonite mine of which approximately 2.83 acres occur within the proposed Upton Plant Site Permit Area. Wetlands found in association with the reclaimed bentonite mine were identified as PEM (2.90 acres Study Area and 2.38 proposed Permit Area) and PUB (0.45 acres Upton Plant Site Study Area and proposed Permit Area) wetlands. These wetlands were isolated and not connected to Coyote Creek or Beaver Creek.

Refer to Tables D10-2.1 and D10-2.2 for a summary of wetland acres within the Upton Plant Site Study Area and proposed Permit Area. For a comprehensive list of plant species observed during the aquatic resources inventory refer to Addendum D10-2-C. Refer to Addendum D10-2-D for photographs. Refer to Addendum D10-2-E for wetland data sheets.

## D10-2.4 CONCLUSION

A total of 15.00 acres of wetlands were identified within the Upton Plant Site Study Area. Approximately 13.99 of these wetland acres occur within the proposed Upton Plant Site Permit Area. A total of 2.13 acres of OWUS were identified within the Upton Plant Site Study Area. Approximately 1.86 of these OWUS acres occur within the proposed Upton Plant Site Permit Area. A combined total of 17.13 acres of aquatic resources were identified within the Upton Plant Site Study Area. Approximately 15.85 of these acres of aquatic resources identified occur within the proposed Upton Plant Site Permit Area. Approximately 6.32 acres of wetlands and 0.88 acres of OWUS identified during the 2012 aquatic resources inventory were found in association with man-made reservoirs or impoundments.

RER requested a jurisdictional determination from the USACE on May 6, 2013, based on the 2012 aquatic resource inventory with the Upton Plant Site Study Area. The USACE approved jurisdictional determination states Coyote Creek and its adjacent wetlands and waters do not meet the Significant Nexus standard when evaluating their relationship to the nearest Traditional Navigable Water. In addition, the remaining aquatic resource features are isolated waters with no substantial nexus to interstate commerce. Therefore, the Upton Plant Site Study Area does not contain any areas that meet the definition of waters of the U.S. as defined at 33 CFR Part 328.3(a). Department of the Army authorization is not required for construction activities within the Upton Plant Site Study Area, because it does not require any discharges of fill material into waters of the U.S. The USACE Jurisdictional Determination Letter and Approved Jurisdictional Determination Forms are located in Addendum D10-2-H.

## D10-2.5 REFERENCES

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# ADDENDUM D10-2-A

TABLES

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**Table D10-2.1. Summary of Wetlands and OWUS within the Upton Plant Site Study Area and Proposed Permit Area**

| Drainage | Map ID | Legal Description | Photo # | 2012 Designation | Cowardin Classification | Study Area Acreage | Permit Area Acreage |
|---|---|---|---|---|---|---|---|
| Coyote Creek | W1 | Sec.28,T48N,R65W | 1-3 | Non-Wetland | N/A | N/A | N/A |
| | W2 | Sec.28,T48N,R65W | 4-6 | Wetland | PEM | 7.54[1] | 7.07[1] |
| | W3 | Sec.28,T48N,R65W | 7-9 | Wetland | PEM | -- | -- |
| | W4 | Sec.28,T48N,R65W | 10-12 | Wetland | PEM | -- | -- |
| | 100 | Sec.28,T48N,R65W | 18-19 | Non-Wetland | N/A | N/A | N/A |
| | 101 | Sec.28,T48N,R65W | 24-25 | Wetland | PEM | -- | -- |
| | 102 | Sec.28,T48N,R65W | 26-29 | Wetland | PEM | -- | -- |
| | W6 | Sec.33,T48N,R65W | 20-23 | Wetland | PEM | -- | -- |
| | | | | | OWUS | 1.25 | 1.25 |
| | W7 | Sec.33,T48N,R65W | 34-36 | Wetland | PUB | 0.39 | 0.39 |
| | 105 | Sec.33,T48N,R65W | 37-38 | Wetland | PEM | -- | -- |
| | 106 | Sec.33,T48N,R65W | 39-41 | Wetland | PEM | -- | -- |
| Reclaimed Bentonite Pits | W5 | Sec.28,T48N,R65W | 13-17 | Wetland | PEM | 0.72 | 0.72 |
| | | | | | OWUS | 0.52 | 0.52 |
| | W10 | Sec.28,T48N,R65W | NA | Wetland | PEM | 0.38 | 0.16 |
| | | | | | OWUS | 0.36 | 0.09 |
| | 103 | Sec.28&33,T48N,R65W | 30-33 | Wetland | PEM | 1.80 | 1.50 |
| | | | | | PUB | 0.45 | 0.45 |
| Unnamed Tributary of Beaver Creek | W8 | Sec.33,T48N,R65W | 42-44 | Wetland | PEM | 0.45[2] | 0.45[2] |
| | 107 | Sec.33,T48N,R65W | 45-48 | Wetland | PEM | -- | -- |
| | 108 | Sec.33,T48N,R65W | 49-50 | Wetland | PEM | -- | -- |
| Unnamed Tributary of Coyote Creek | W9 | Sec.33,T48N,R65W | 51-54 | Wetland | PEM | 2.97 | 2.97 |
| Seep | 109 | Sec.28,T48N,R65W | 55-56 | Seep | N/A | 0.30 | 0.30 |

[1] Value includes all PEM identified along and within Coyote Creek (W2, W3, W4, W6, 101, 102, 105, and 106).
[2] Value includes all PEM identified along and within Unnamed Tributary of Beaver Creek (W8, 107, and 108)

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**Table D10-2.2: Total Wetland and OWUS Acreages within the Proposed Upton Plant Site Permit Area.**

| Type | Study Area Acreage | Permit Area Acreage |
|---|---|---|
| OWUS | 2.13 | 1.86 |
| PEM | 13.86 | 12.86 |
| PUB | 0.84 | 0.84 |
| Seep | 0.30 | 0.30 |
| **Total** | **17.13** | **15.85** |

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# ADDENDUM D10-2-B

MAPS

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# ADDENDUM D10-2-C

PLANT SPECIES LIST

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| **Scientific Name** | **Common Name** | **Indicator Status** |
| --- | --- | --- |
| *Agrostis stolonifera* | Spreading bent | FACW |
| *Beckmannia syzigachne* | American slough grass | OBL |
| *Carex* sp. | Sedge | N/A |
| *Distichlis spicata* | Costal salt grass | FACW |
| *Eleocharis palustris* | Common spike-rush | OBL |
| *Hordeum jubatum* | Fox-tail barley | FACW |
| *Lepidium perfoliatum* | Clasping pepperwort | FAC |
| *Pascopyrum smithii* | Western wheatgrass | FAC |
| *Poa secunda* | Curly bluegrass | FACU |
| *Rumex* sp. | Dock | N/A |
| *Spartina pectinata* | Freshwater cordgrass | FACW |
| *Typha latifolia* | Broadleaf cattail | OBL |
| Unknown Forb | Unknown forb species | N/A |
| *Xanthium strumarium* | Rough cocklebur | FAC |

Indicator Status Key:

OBL (Obligate Wetland Plant Species) – Almost always is a hydrophyte, rarely in uplands.

FACW (Facultative Wetland Plant Species) – Usually is a hydrophyte, but occasionally found in uplands

FAC (Facultative Plant Species) – Commonly occurs as either a hydrophyte or non-hydrophyte

FACU (Falcultative Upland Plant Species) – Occasionally is a hydrophyte, but usually occurs in uplands

UPL (Obligate Upland Plant Species) – Rarely is a hydrophyte, almost always in uplands

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# ADDENDUM D10-2-D

PHOTOGRAPHS

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Photo 1: W1 Upstream


Photo 2: W1 Downstream

Photo 3: W1 Soil Profile

Photo 4: W2 Upstream

Photo 5: W2 Downstream

Photo 6: W2 Soil Profile

Photo 7: W3 Upstream

Photo 8: W3 Downstream

Photo 9: W3 Soil Profile

Photo 10: W4 Upstream

Photo 11: W4 Downstream

Photo 12: W4 Soil Profile

Photo 13: W5 West

Photo 14: W5 Northeast

Photo 15: W5 North

Photo 16: W5 East

Photo 17: W5 Soil Profile

Photo 18: 100 Upstream

Photo 19: 100 Downstream

Photo 20: W6 North

Photo 21: W6 East

Photo 22: W6 Northeast

Photo 23: W6 Soil Profile

Photo 24: 101 Upstream

Photo 25: 101 Downstream

Photo 26: 102 East

Photo 27: 102 North

Photo 28: 102 West


Photo 29: 102 South


Photo 30: 103 Southeast

Photo 31: 103 East

Photo 32: 103 North

Photo 33: 103 West

Photo 34: W7 Upstream

Photo 35: W7 Downstream

Photo 36: W7 Soil Profile

Photo 37: 105 Upstream

Photo 38: 105 Downstream

Photo 39: 106 Upstream

Photo 40: 106 Channel

Photo 41: 106 Downstream

Photo 42: W8 Upstream

Photo 43: W8 Downstream

Photo 44: W8 Soil Profile

Photo 45: 107 Upstream

Photo 46: 107 Downstream

Photo 47: 107 Upstream

Photo 48: 107 Downstream

Photo 49: 108 Upstream

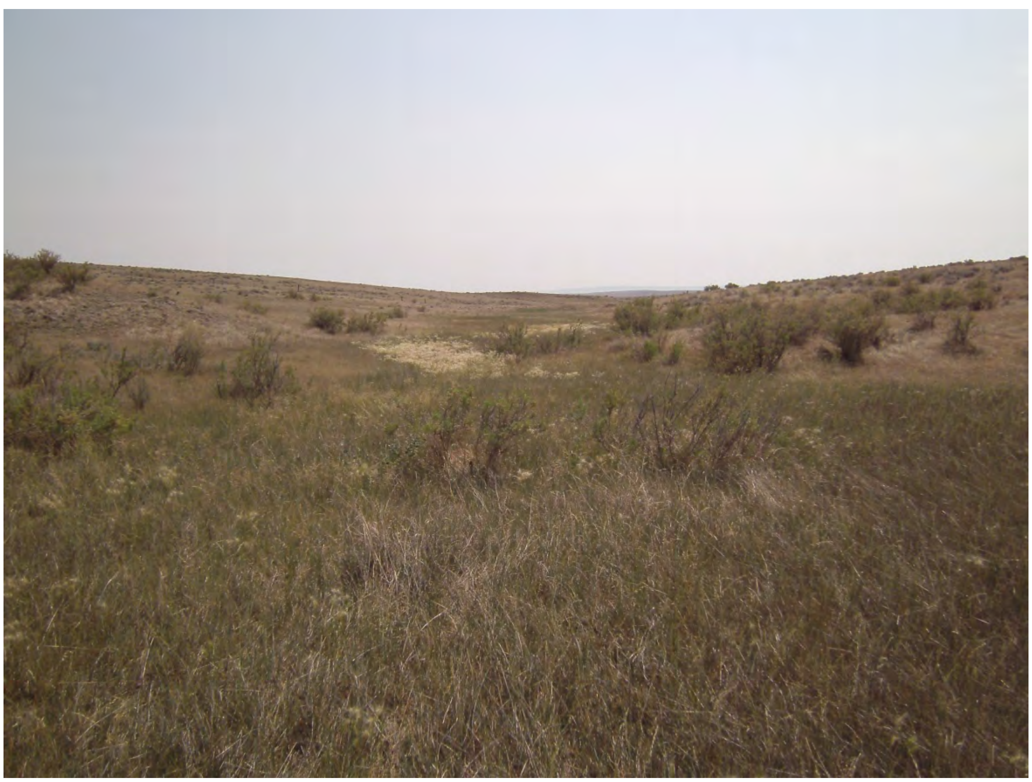

Photo 50: 108 Downstream

Photo 51: W9 Upstream

Photo 52: W9 Downstream

Photo 53: W9 Side of Pond

Photo 54: W9 Soil Profile


Photo 55: 109 Upstream


Photo 56: 109 Downstream

# ADDENDUM D10-2-E

WETLAND DETERMINATION DATA FORMS

GREAT PLAINS REGION (VERSION 2.0)

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## WETLAND DETERMINATION DATA FORM-Great Plains Region

Project/Site: Bear Lodge – Upton Plant Site City/County: Upton/Weston Sampling Date: 6/28/2012

Applicant/Owner: Rare Element Resources State: Wyoming Sampling Point: W1

Investigator(s): K. Wilson, J. Qualm Section, Township, Range: Section 28, Township 48N, Range 65W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRP): Western Great Plains Lat: 44.110358 Long: -104.667193 Datum: GCS NAD 1983

Soil Map Unit Name: Bahl Clay Loam NWI Classification: Non-wetland

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.

| | Yes | No |
|---|---|---|
| Hydrophytic Vegetation Present? | X | |
| Hydric Soil Present? | | X |
| Wetland Hydrology Present | | X |

**Is the Sampled Area within a Wetland** **Yes** ____ **No** X

Remarks:
Photo 1 - Upstream; Photo 2 – Downstream; Photo 3 – Soil Profile

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| =Total Cover | | | |
| Sapling/Shrub Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| = Total Cover | | | |
| Herb Stratum (Plot size: 1m) | | | |
| 1. *Hordeum jubatum* | 60 | Y | FACW |
| 2. *Eleocharis palustris* | 15 | N | OBL |
| 3. *Spartina pectinata* | 30 | Y | FACW |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| = Total Cover | 105 | | |
| Woody Vine Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| = Total Cover | | | |

% Bare Ground in Herb Stratum 20

**Dominance Test Worksheet**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Area OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index Worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | | x 3 = | |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column Totals: | (A) | | (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** X **No** ____

Remarks:
Litter cover was 30%

**SOIL** Sampling Point: W1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
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[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted).**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matirx (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 or LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**
Type: ___
Depth (inches): ___

**Hydric Soils Present?** **Yes** ___ **No** X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crusts (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Oder (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres along Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thick Muck Surface (C7)
___ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

X Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres along Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

**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** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM-Great Plains Region

Project/Site: Bear Lodge – Upton Plant Site City/County: Upton/Weston Sampling Date: 6/28/2012

Applicant/Owner: Rare Element Resources State: Wyoming Sampling Point: W2

Investigator(s): K. Wilson, J. Qualm Section, Township, Range: Section 28, Township 48N, Range 65W

Landform (hillslope, terrace, etc.): Channel Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRP): Western Great Plains Lat: 44.110239 Long: -104.666706 Datum: GCS NAD 1983

Soil Map Unit Name: Lohmiller Silty Clay Loam NWI Classification: PEM

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** **Yes** X **No** ____ |
| Hydric Soil Present? | Yes X | No ____ | |
| Wetland Hydrology Present | Yes X | No ____ | |

Remarks:
Photo 4 – Upstream; Photo 5 – Downstream; Photo 6 – Soil Profile

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| =Total Cover | | | |
| **Sapling/Shrub Stratum (Plot size: ____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| = Total Cover | | | |
| **Herb Stratum (Plot size: 1m)** | | | |
| 1. *Hordeum jubatum* | 5 | N | FACW |
| 2. *Eleocharis palustris* | 15 | Y | OBL |
| 3. *Typha latifolia* | 25 | Y | OBL |
| 4. *Spartina pectinata* | 30 | Y | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| = Total Cover | 75 | | |
| **Woody Vine Stratum (Plot size: ____)** | | | |
| 1. | | | |
| 2. | | | |
| = Total Cover | | | |
| % Bare Ground in Herb Stratum | 50 | | |

**Dominance Test Worksheet**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Area OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index Worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** X **No** ____

Remarks:
Litter cover was 20%

**SOIL** Sampling Point: W2

**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 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted).**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matirx (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 or LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**
Type: ___
Depth (inches): ___

**Hydric Soils Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crusts (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Oder (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres along Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thick Muck Surface (C7)
___ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

X Surface Soil Cracks (B6)
X Sparsely Vegetated Concave Surface (B8)
X Drainage Patterns (B10)
___ Oxidized Rhizospheres along Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

**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:

# WETLAND DETERMINATION DATA FORM-Great Plains Region

Project/Site: Bear Lodge – Upton Plant Site City/County: Upton/Weston Sampling Date: 6/28/2012

Applicant/Owner: Rare Element Resources State: Wyoming Sampling Point: W3

Investigator(s): K. Wilson, J. Qualm Section, Township, Range: Section 28, Township 48N, Range 65W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRP): Western Great Plains Lat: 44.110023 Long: -104.666683 Datum: GCS NAD 1983

Soil Map Unit Name: Lohmiller Silty Clay Loam NWI Classification: PEM

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** **Yes** X **No** ____ |
| Hydric Soil Present? | Yes X | No ____ | |
| Wetland Hydrology Present | Yes X | No ____ | |

Remarks:

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| =Total Cover | | | |
| **Sapling/Shrub Stratum (Plot size: ____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| = Total Cover | | | |
| **Herb Stratum (Plot size: 1m)** | | | |
| 1. *Eleocharis palustris* | 98 | Y | OBL |
| 2. *Spartina pectinata* | 1 | N | FACW |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| = Total Cover | 99 | | |
| **Woody Vine Stratum (Plot size: ____)** | | | |
| 1. | | | |
| 2. | | | |
| = Total Cover | | | |

% Bare Ground in Herb Stratum 0

**Dominance Test Worksheet**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Area OBL, FACW, or FAC: ____ (A/B)

**Prevalence Index Worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** X **No** ____

Remarks:
Litter cover was 45%

**SOIL** Sampling Point: W3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 5Y 3/1 | 90 | 7.5YR 4/6 | 10 | C | PL | Clay Loam | |
| 5-12 | 5Y 3/1 | 100 | | | | | | |
| 12-21+ | 10YR 3/2 | 90 | Gley1 2.5/N | 10 | D | PL | Silty Clay Loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted).**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
X Depleted Matirx (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 or LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**
Type: ___
Depth (inches): ___

**Hydric Soils Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crusts (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Oder (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres along Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thick Muck Surface (C7)
___ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

X Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres along Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
X Frost-Heave Hummocks (D7) (**LRR F**)

**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:

## WETLAND DETERMINATION DATA FORM-Great Plains Region

Project/Site: Bear Lodge – Upton Plant Site City/County: Upton/Weston Sampling Date: 6/28/2012

Applicant/Owner: Rare Element Resources State: Wyoming Sampling Point: W4

Investigator(s): K. Wilson, J. Qualm Section, Township, Range: Section 28, Township 48N, Range 65W

Landform (hillslope, terrace, etc.): Channel Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRP): Western Great Plains Lat: 44.10994 Long: -104.666096 Datum: GCS NAD 1983

Soil Map Unit Name: Lohmiller Silty Clay Loam NWI Classification: PEM

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** **Yes** X **No** ___ |
| Hydric Soil Present? | Yes X | No ___ | |
| Wetland Hydrology Present | Yes X | No ___ | |

Remarks:
Photo 11 – Upstream; Photo 12 – Downstream; Photo 13 – Soil Profile

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ___) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| =Total Cover | | | |
| **Sapling/Shrub Stratum** (Plot size: ___) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| = Total Cover | | | |
| **Herb Stratum** (Plot size: 1m) | | | |
| 1. *Typha latifolia* | 70 | Y | OBL |
| 2. *Spartina pectinata* | 50 | Y | FACW |
| 3. *Beckmannia syzigachne* | 10 | N | OBL |
| 4. *Hordeum jubatum* | 5 | N | FACW |
| 5. *Eleocharis palustris* | 25 | N | OBL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| = Total Cover | 160 | | |
| **Woody Vine Stratum** (Plot size: ___) | | | |
| 1. | | | |
| 2. | | | |
| = Total Cover | | | |
| % Bare Ground in Herb Stratum 30 | | | |

**Dominance Test Worksheet**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Area OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index Worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = ___

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤ 3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

Remarks:
Litter cover was 40%

**SOIL** Sampling Point: W4

**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 |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 2.5Y 2.5/1 | 55 | 7.5Y 3/4 | 45 | C | M/PL | Clay Loam | |
| 5-12 | 2.5Y 2.5/1 | 80 | 7.5Y 3/4 | 20 | C | M/PL | Silty Clay Loam | |
| 12-14+ | 2.5Y 2.5/1 | 80 | 7.5Y 3/4 | 20 | C | M/PL | Clay | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted).**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matirx (F3)
___ Redox Dark Surface (F6)
X Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16)
(**MLRA 72 & 73 or LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16)
(**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**
Type: ___
Depth (inches): ___

**Hydric Soils Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crusts (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Oder (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres along Living Roots (C3)
(**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thick Muck Surface (C7)
___ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

X Surface Soil Cracks (B6)
X Sparsely Vegetated Concave Surface (B8)
X Drainage Patterns (B10)
___ Oxidized Rhizospheres along Living Roots (C3)
___ (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

**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): ___
(includes capillary fringe)

**Wetland Hydrology Present?** **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM-Great Plains Region

Project/Site: Bear Lodge – Upton Plant Site City/County: Upton/Weston Sampling Date: 6/28/2012

Applicant/Owner: Rare Element Resources State: Wyoming Sampling Point: W5

Investigator(s): K. Wilson, J. Qualm Section, Township, Range: Section 28, Township 48N, Range 65W

Landform (hillslope, terrace, etc.): Pond Edge Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRP): Western Great Plains Lat: 44.109342 Long: -104.664687 Datum: GCS NAD 1983

Soil Map Unit Name: Bentonite Pits-Reclaimed NWI Classification: PEM

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.

| | Yes | No |
|---|---|---|
| Hydrophytic Vegetation Present? | X | |
| Hydric Soil Present? | X | |
| Wetland Hydrology Present | X | |

**Is the Sampled Area within a Wetland** **Yes** X **No** ____

Remarks:
Photo 14 – West; Photo 15 – Northeast; Photo 16 – North; Photo 17 – South; Photo 18 – Soil Profile

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| =Total Cover | | | |
| Sapling/Shrub Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| = Total Cover | | | |
| Herb Stratum (Plot size: 1m) | | | |
| 1. *Hordeum jubatum* | 15 | N | FACW |
| 2. *Distichlis spicata* | 80 | Y | FACW |
| 3. *Eleocharis palustris* | 3 | N | OBL |
| 4. *Lepidium perfoliatum* | 4 | N | FAC |
| 5. *Poa secunda* | 2 | N | FACU |
| 6. Unknown Forb | 5 | N | - |
| 7. | | | |
| 8. | | | |
| = Total Cover | 109 | | |
| Woody Vine Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| = Total Cover | | | |

% Bare Ground in Herb Stratum 20

**Dominance Test Worksheet**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Area OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index Worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤ 3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** X **No** ____

Remarks:

US Army Corps of Engineers Great Plains – Version 2.0

**SOIL** Sampling Point: W5

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3 | 2.5Y 3/1 | 40 | 10YR 4/6 | 25 | C | PL | Silty Clay Loam | |
| | | | Gley1 3/N | 35 | D | M | Silty Clay Loam | |
| 3-8 | 5Y 3/1 | 100 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted).**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matirx (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 or LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**
Type: ___
Depth (inches): ___

**Hydric Soils Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

X Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
X Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
X Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
X Salt Crusts (B11)
X Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Oder (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres along Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thick Muck Surface (C7)
___ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

X Surface Soil Cracks (B6)
X Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres along Living Roots (C3) (**where tilled**)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**
Surface Water Present? Yes X No ___ Depth (inches): 18-24"
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:

## WETLAND DETERMINATION DATA FORM-Great Plains Region

Project/Site: Bear Lodge – Upton Plant Site City/County: Upton/Weston Sampling Date: 6/28/2012

Applicant/Owner: Rare Element Resources State: Wyoming Sampling Point: W6

Investigator(s): K. Wilson, J. Qualm Section, Township, Range: Section 33, Township 48N, Range 65W

Landform (hillslope, terrace, etc.): Pond Edge Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRP): Western Great Plains Lat: 44.105771 Long: -104.662808 Datum: GCS NAD 1983

Soil Map Unit Name: Lohmiller Silty Clay Loam NWI Classification: PEM

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.

| | Yes | No |
|---|---|---|
| Hydrophytic Vegetation Present? | X | |
| Hydric Soil Present? | X | |
| Wetland Hydrology Present | X | |

**Is the Sampled Area within a Wetland** **Yes** X **No** ____

Remarks:
Photo 21 – North; Photo 22 – East; Photo 23 – Northeast; Photo 24 – Soil Profile

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | =Total Cover | | |
| Sapling/Shrub Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | = Total Cover | | |
| Herb Stratum (Plot size: 1m) | | | |
| 1. *Eleocharis palustris* | 30 | Y | OBL |
| 2. *Typha latifolia* | 45 | Y | OBL |
| 3. *Spartina pectinata* | 15 | N | FACW |
| 4. *Hordeum jubatum* | 10 | N | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| Woody Vine Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum 45

**Dominance Test Worksheet**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Area OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index Worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** X **No** ____

Remarks:

US Army Corps of Engineers Great Plains – Version 2.0

**SOIL** Sampling Point: W6

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | | 55 | 5YR 3/4 | 45 | C | PL/M | Silty Clay Loam | Salt in pore lining |
| 4-12 | | 85 | 5YR 3/4 | 15 | C | PL/M | Silty Clay Loam | |
| 12-16+ | 2.5Y 3/2 | 100 | | | | | Silty Clay Loam | Shale fragments present |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted).**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
X Depleted Matirx (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 or LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**
Type: ___
Depth (inches): ___

**Hydric Soils Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

X Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
X Water Marks (B1)
X Sediment Deposits (B2)
X Drift Deposits (B3)
X Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
X Salt Crusts (B11)
X Aquatic Invertebrates (B13)
X Hydrogen Sulfide Oder (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres along Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thick Muck Surface (C7)
___ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

X Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres along Living Roots (C3) (**where tilled**)
X Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes X | No ___ | Depth (inches): 18-32” |
| 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:

## WETLAND DETERMINATION DATA FORM-Great Plains Region

Project/Site: Bear Lodge – Upton Plant Site City/County: Upton/Weston Sampling Date: 6/28/2012

Applicant/Owner: Rare Element Resources State: Wyoming Sampling Point: W7

Investigator(s): K. Wilson, J. Qualm Section, Township, Range: Section 33, Township 48N, Range 65W

Landform (hillslope, terrace, etc.): Channel Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRP): Western Great Plains Lat: 44.100215 Long: -104.662502 Datum: GCS NAD 1983

Soil Map Unit Name: Bahl Clay Loam NWI Classification: PUB

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.

| | Yes | No | | |
|---|---|---|---|---|
| Hydrophytic Vegetation Present? | | X | **Is the Sampled Area within a Wetland** | **Yes** X **No** ____ |
| Hydric Soil Present? | X | | | |
| Wetland Hydrology Present | X | | | |

Remarks:
Photo 35 – Upstream; Photo 36 – Downstream; Photo 37 – Soil Profile

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| =Total Cover | | | |
| Sapling/Shrub Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| = Total Cover | | | |
| Herb Stratum (Plot size: 1m) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| = Total Cover | | | |
| Woody Vine Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| = Total Cover | | | |
| % Bare Ground in Herb Stratum 100 | | | |

**Dominance Test Worksheet**

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Area OBL, FACW, or FAC: ____ (A/B)

**Prevalence Index Worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** ____ **No** X

Remarks:

**SOIL** Sampling Point: W7

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14 | Gley1 2.5/N | 60 | 7.5Y 3/4 | 40 | C | M/PL | Silty Clay Loam | |
| 14-16 | 2.5Y 3/2 | 35 | 7.5Y 3/4 | 5 | C | | | |
| | | | Gley1 2.5/N | 40 | D | | | Shale deposits throughout |
| | | | Gley1 2.5/5PB | 20 | D | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted).**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
X Loamy Gleyed Matrix (F2)
___ Depleted Matirx (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 or LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**
Type: ___
Depth (inches): ___

**Hydric Soils Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crusts (B11)
X Aquatic Invertebrates (B13)
X Hydrogen Sulfide Oder (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres along Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thick Muck Surface (C7)
___ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

X Surface Soil Cracks (B6)
X Sparsely Vegetated Concave Surface (B8)
X Drainage Patterns (B10)
___ Oxidized Rhizospheres along Living Roots (C3) (**where tilled**)
X Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

**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:
The area appears to have been recently dried up. Crayfish carcasses were observed in the soil surface along with crayfish burrows.

## WETLAND DETERMINATION DATA FORM-Great Plains Region

Project/Site: Bear Lodge – Upton Plant Site City/County: Upton/Weston Sampling Date: 6/28/2012

Applicant/Owner: Rare Element Resources State: Wyoming Sampling Point: W8

Investigator(s): K. Wilson, J. Qualm Section, Township, Range: Section 33, Township 48N, Range 65W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRP): Western Great Plains Lat: 44.094513 Long: -104.670742 Datum: GCS NAD 1983

Soil Map Unit Name: Bahl Clay Loam NWI Classification: PEM

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** **Yes** X **No** ____ |
| Hydric Soil Present? | Yes X | No ____ | |
| Wetland Hydrology Present | Yes X | No ____ | |

Remarks:
Photo 45 – Upstream; Photo 46 – Downstream; Photo 47 – Soil Profile

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | =Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: ____)** | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | = Total Cover | | |
| **Herb Stratum (Plot size: 1m)** | | | |
| 1. *Typha latifolia* | 15 | Y | OBL |
| 2. *Eleocharis palustris* | 15 | Y | OBL |
| 3. *Poa secunda* | 20 | Y | FACU |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 5045 = Total Cover | | |
| **Woody Vine Stratum (Plot size: ____)** | | | |
| 1. | | | |
| 2. | | | |
| | = Total Cover | | |
| % Bare Ground in Herb Stratum ____ | | | |

**Dominance Test Worksheet**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Area OBL, FACW, or FAC: 67 (A/B)

**Prevalence Index Worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is $\leq 3.0$[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** X **No** ____

Remarks:

**SOIL** Sampling Point: W8

**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 |
| 0-2 | | | | | | | | |
| 2-10 | 5Y 2.5/1 | 65 | 7.5YR 3/4 | 35 | C | PL | | |
| 10-20+ | 5Y 2.5/2 | 80 | 10YR 3/6 | 20 | C | PL | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted).**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
X Depleted Matirx (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 or LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**
Type: ___
Depth (inches): ___

**Hydric Soils Present?** **Yes** X **No** ___

Remarks:
Shale throughout soil profile, more abundant after 10 inches.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
X Salt Crusts (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Oder (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres along Living Roots (C3) **(where not tilled)**
___ Presence of Reduced Iron (C4)
___ Thick Muck Surface (C7)
___ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

X Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
X Drainage Patterns (B10)
___ Oxidized Rhizospheres along Living Roots (C3) **(where tilled)**
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

**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:

# WETLAND DETERMINATION DATA FORM-Great Plains Region

Project/Site: Bear Lodge – Upton Plant Site City/County: Upton/Weston Sampling Date: 6/28/2012

Applicant/Owner: Rare Element Resources State: Wyoming Sampling Point: W9

Investigator(s): K. Wilson, J. Qualm Section, Township, Range: Section 33, Township 48N, Range 65W

Landform (hillslope, terrace, etc.): Pond Edge Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRP): Western Great Plains Lat: 44.105523 Long: -104.673518 Datum: GCS NAD 1983

Soil Map Unit Name: Samday-Rock Outcrop Complex NWI Classification: PEM

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.

| | Yes | No |
|---|---|---|
| Hydrophytic Vegetation Present? | X | |
| Hydric Soil Present? | X | |
| Wetland Hydrology Present | X | |

**Is the Sampled Area within a Wetland** **Yes** X **No** ____

Remarks:
Photo 54 – Upstream; Photo 55 – Downstream; Photo 56 – Side of Pond; Photo 57 – Soil Profile

## VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| =Total Cover | | | |
| Sapling/Shrub Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| = Total Cover | | | |
| Herb Stratum (Plot size: 1m) | | | |
| 1. *Typha latifolia* | 80 | Y | OBL |
| 2. *Eleocharis palustris* | 40 | Y | OBL |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| = Total Cover | 120 | | |
| Woody Vine Stratum (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| = Total Cover | | | |
| % Bare Ground in Herb Stratum 5 | | | |

**Dominance Test Worksheet**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Area OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index Worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** **Yes** X **No** ____

Remarks:

**SOIL** Sampling Point: W9

**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 |
| 0-16 | 2.5Y 3/2 | 35 | 7.5YR 3/4 | 20 | C | PL | Silty Clay Loam | |
| | | | Gley2 2.5/5PB | 45 | D | M | Silty Clay Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted).**

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
X Loamy Gleyed Matrix (F2)
___ Depleted Matirx (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 or LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

___ 1 cm Muck (A9) (**LRR I, J**)
___ Coast Prairie Redox (A16) (**LRR F, G, H**)
___ Dark Surface (S7) (**LRR G**)
___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**
Type: ___
Depth (inches): ___

**Hydric Soils Present?** **Yes** X **No** ___

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

X Surface Water (A1)
X High Water Table (A2)
X Saturation (A3)
X Water Marks (B1)
___ Sediment Deposits (B2)
X Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
X Salt Crusts (B11)
X Aquatic Invertebrates (B13)
X Hydrogen Sulfide Oder (C1)
___ Dry-Season Water Table (C2)
___ Oxidized Rhizospheres along Living Roots (C3) (**where not tilled**)
___ Presence of Reduced Iron (C4)
___ Thick Muck Surface (C7)
___ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

X Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Oxidized Rhizospheres along Living Roots (C3) (**where tilled**)
X Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)
___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

| | Yes | No | Depth (inches) |
|---|---|---|---|
| Surface Water Present? | X | | 12-24” |
| Water Table Present? | X | | 0” |
| Saturation Present? (includes capillary fringe) | X | | 0” |

**Wetland Hydrology Present?** **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

# ADDENDUM D10-2-F

2012 WATER QUALITY DATA FOR COYOTE CREEK AND SETTLING PONDS

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| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| Bacteria | | | | | | | | | |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Bacteria, Fecal Coliform | ND | CFU/100ml | -- | 10 | A9222 D | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Bacteria, Fecal Coliform | ND | CFU/100ml | -- | 2 | A9222 D | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Bacteria, Fecal Coliform | ND | CFU/100ml | -- | 10 | A9222 D | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Bacteria, Fecal Coliform | ND | CFU/100ml | -- | 2 | A9222 D | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Bacteria, Fecal Coliform | ND | CFU/100ml | -- | 10 | A9222 D | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Bacteria, Fecal Coliform | ND | CFU/100ml | -- | 2 | A9222 D | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Bacteria, Fecal Coliform | ND | CFU/100ml | -- | 10 | A9222 D | Aqueous |
| Data Quality | | | | | | | | | |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | A/C Balance Sigma | -0.87 | % | -- | -- | A1030 E | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | A/C Balance | 1.34 | % | -- | -- | A1030 E | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Anions | 6.7 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Cations | 6.88 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | A/C Balance | -2.15 | % | -- | -- | A1030 E | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | A/C Balance Sigma | 1.76 | % | -- | -- | A1030 E | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Anions | 12.5 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Cations | 12 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | A/C Balance | 1.93 | % | -- | -- | A1030 E | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | A/C Balance Sigma | -1.31 | % | -- | -- | A1030 E | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Anions | 7.28 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Cations | 7.57 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | A/C Balance | -3.06 | % | -- | -- | A1030 E | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | A/C Balance Sigma | 2.48 | % | -- | -- | A1030 E | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Anions | 12.6 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Cations | 11.8 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | A/C Balance | -1.16 | % | -- | -- | A1030 E | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | A/C Balance Sigma | 0.8 | % | -- | -- | A1030 E | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Anions | 8.11 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Cations | 7.93 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | A/C Balance | -2.23 | % | -- | -- | A1030 E | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | A/C Balance Sigma | 1.73 | % | -- | -- | A1030 E | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Anions | 11 | meq/L | -- | -- | A1030 E | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Cations | 10.5 | meq/L | -- | -- | A1030 E | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Nitrogen, Nitrate as N | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Nitrogen, Nitrite as N | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Nitrogen, Nitrate+Nitrite as N | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Phosphorus, Dissolved Orthophosphate as P | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Sulfate | 319 | mg/L | -- | 1 | E300.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Calcium | 32 | mg/L | -- | 1 | E200.7 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Magnesium | 16 | mg/L | -- | 1 | E200.7 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Potassium | 7 | mg/L | -- | 1 | E200.7 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Sodium | 112 | mg/L | -- | 1 | E200.7 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Bicarbonate as HCO3 | 89 | mg/L | -- | 5 | A2320 B | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Carbonate as CO3 | ND | mg/L | -- | 5 | A2320 B | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Bromide | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Chloride | 7 | mg/L | -- | 1 | E300.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Fluoride | 0.4 | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Nitrogen, Nitrate as N | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Nitrogen, Nitrite as N | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Nitrogen, Nitrate+Nitrite as N | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Phosphorus, Dissolved Orthophosphate as P | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Sulfate | 448 | mg/L | D | 2 | E300.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Calcium | 39 | mg/L | -- | 1 | E200.7 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Magnesium | 20 | mg/L | -- | 1 | E200.7 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Potassium | 10 | mg/L | -- | 1 | E200.7 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Sodium | 154 | mg/L | -- | 1 | E200.7 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Bicarbonate as HCO3 | 70 | mg/L | -- | 5 | A2320 B | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Carbonate as CO3 | ND | mg/L | -- | 5 | A2320 B | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Bromide | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Chloride | 4 | mg/L | -- | 1 | E300.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Fluoride | 0.6 | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Nitrogen, Nitrate as N | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Nitrogen, Nitrite as N | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Nitrogen, Nitrate+Nitrite as N | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Phosphorus, Dissolved Orthophosphate as P | ND | mg/L | -- | 0.1 | E300.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Sulfate | 456 | mg/L | -- | 1 | E300.0 | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | USP1-SW-03192012 | 3/19/2012 11:00 | Calcium | 62 | mg/L | -- | 1 | E200.7 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Magnesium | 44 | mg/L | -- | 1 | E200.7 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Potassium | 8 | mg/L | -- | 1 | E200.7 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Sodium | 81 | mg/L | -- | 1 | E200.7 | Aqueous |
| **Metals, Total Recoverable** | | | | | | | | | |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Aluminum | 5.34 | mg/L | -- | 0.05 | E200.7 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Antimony | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Arsenic | 0.002 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Barium | ND | mg/L | -- | 0.05 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Beryllium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Boron | 0.1 | mg/L | -- | 0.1 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Cadmium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Chromium | 0.004 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Cobalt | 0.002 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Copper | 0.006 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Iron | 3.07 | mg/L | -- | 0.03 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Lead | 0.004 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Lithium | ND | mg/L | -- | 0.1 | E200.7 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Manganese | 0.133 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Mercury | ND | mg/L | -- | 0.0001 | E245.1 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Molybdenum | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Nickel | 0.015 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Selenium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Silver | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Thallium | ND | mg/L | -- | 0.0005 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Thorium | ND | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Uranium | 0.0009 | mg/L | -- | 0.0001 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Vanadium | ND | mg/L | -- | 0.01 | E200.8 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Zinc | 0.028 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Aluminum | 1.07 | mg/L | -- | 0.05 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Antimony | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Arsenic | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Barium | ND | mg/L | -- | 0.05 | E200.8 | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Beryllium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Boron | 0.2 | mg/L | -- | 0.1 | E200.7 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Cadmium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Chromium | 0.001 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Cobalt | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Copper | ND | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Iron | 0.79 | mg/L | -- | 0.03 | E200.7 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Lead | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Lithium | ND | mg/L | -- | 0.1 | E200.7 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Manganese | 0.077 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Mercury | ND | mg/L | -- | 0.0001 | E245.1 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Molybdenum | 0.001 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Nickel | 0.01 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Selenium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Silver | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Thallium | ND | mg/L | -- | 0.0005 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Thorium | ND | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Uranium | 0.0007 | mg/L | -- | 0.0001 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Vanadium | ND | mg/L | -- | 0.01 | E200.8 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Zinc | 0.012 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Aluminum | 6.34 | mg/L | -- | 0.05 | E200.7 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Antimony | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Arsenic | 0.002 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Barium | 0.06 | mg/L | -- | 0.05 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Beryllium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Boron | ND | mg/L | -- | 0.1 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Cadmium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Chromium | 0.004 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Cobalt | 0.001 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Copper | 0.006 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Iron | 3.9 | mg/L | -- | 0.03 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Lead | 0.004 | mg/L | -- | 0.001 | E200.8 | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Lithium | ND | mg/L | -- | 0.1 | E200.7 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Manganese | 0.052 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Mercury | ND | mg/L | -- | 0.0001 | E245.1 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Molybdenum | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Nickel | 0.013 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Selenium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Silver | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Thallium | ND | mg/L | -- | 0.0005 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Thorium | ND | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Uranium | 0.001 | mg/L | -- | 0.0001 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Vanadium | ND | mg/L | -- | 0.01 | E200.8 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Zinc | 0.03 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Aluminum | 2.08 | mg/L | -- | 0.05 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Antimony | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Arsenic | 0.001 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Barium | 0.06 | mg/L | -- | 0.05 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Beryllium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Boron | 0.2 | mg/L | -- | 0.1 | E200.7 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Cadmium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Chromium | 0.002 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Cobalt | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Copper | 0.006 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Iron | 1.4 | mg/L | -- | 0.03 | E200.7 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Lead | 0.001 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Lithium | 0.1 | mg/L | -- | 0.1 | E200.7 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Manganese | 0.051 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Mercury | ND | mg/L | -- | 0.0001 | E245.1 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Molybdenum | 0.002 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Nickel | 0.013 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Selenium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Silver | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Thallium | ND | mg/L | -- | 0.0005 | E200.8 | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Thorium | ND | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Uranium | 0.0012 | mg/L | -- | 0.0001 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Vanadium | ND | mg/L | -- | 0.01 | E200.8 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Zinc | 0.011 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Aluminum | 3.73 | mg/L | -- | 0.05 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Antimony | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Arsenic | 0.002 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Barium | 0.07 | mg/L | -- | 0.05 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Beryllium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Boron | 0.1 | mg/L | -- | 0.1 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Cadmium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Chromium | 0.004 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Cobalt | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Copper | 0.006 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Iron | 4.1 | mg/L | -- | 0.03 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Lead | 0.003 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Lithium | ND | mg/L | -- | 0.1 | E200.7 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Manganese | 0.03 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Mercury | ND | mg/L | -- | 0.0001 | E245.1 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Molybdenum | 0.002 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Nickel | 0.014 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Selenium | 0.001 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Silver | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Thallium | ND | mg/L | -- | 0.0005 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Thorium | ND | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Uranium | 0.0008 | mg/L | -- | 0.0001 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Vanadium | 0.01 | mg/L | -- | 0.01 | E200.8 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Zinc | 0.025 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Aluminum | 1.38 | mg/L | -- | 0.05 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Antimony | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Arsenic | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Barium | 0.05 | mg/L | -- | 0.05 | E200.8 | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Beryllium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Boron | 0.2 | mg/L | -- | 0.1 | E200.7 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Cadmium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Chromium | 0.001 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Cobalt | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Copper | ND | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Iron | 0.89 | mg/L | -- | 0.03 | E200.7 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Lead | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Lithium | ND | mg/L | -- | 0.1 | E200.7 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Manganese | 0.07 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Mercury | ND | mg/L | -- | 0.0001 | E245.1 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Molybdenum | 0.002 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Nickel | 0.01 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Selenium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Silver | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Thallium | ND | mg/L | -- | 0.0005 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Thorium | ND | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Uranium | 0.0008 | mg/L | -- | 0.0001 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Vanadium | ND | mg/L | -- | 0.01 | E200.8 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Zinc | 0.009 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Aluminum | 1.23 | mg/L | -- | 0.05 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Antimony | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Arsenic | 0.001 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Barium | ND | mg/L | -- | 0.05 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Beryllium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Boron | 0.2 | mg/L | -- | 0.1 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Cadmium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Chromium | 0.002 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Cobalt | 0.001 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Copper | ND | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Iron | 1.28 | mg/L | -- | 0.03 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Lead | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | USP1-SW-03192012 | 3/19/2012 11:00 | Lithium | 0.1 | mg/L | -- | 0.1 | E200.7 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Manganese | 0.152 | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Mercury | ND | mg/L | -- | 0.0001 | E245.1 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Molybdenum | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Nickel | 0.015 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Selenium | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Silver | ND | mg/L | -- | 0.001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Thallium | ND | mg/L | -- | 0.0005 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Thorium | ND | mg/L | -- | 0.005 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Uranium | 0.0005 | mg/L | -- | 0.0001 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Vanadium | ND | mg/L | -- | 0.01 | E200.8 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Zinc | 0.008 | mg/L | -- | 0.005 | E200.8 | Aqueous |
| **Non-Metals** | | | | | | | | | |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Alkalinity, Total as CaCO3 | 44 | mg/L | -- | 5 | A2320 B | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Conductivity @ 25 C | 702 | umhos/cm | -- | 10 | A2510 B | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Cyanide, Total | ND | mg/L | -- | 0.005 | Kelada mod | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Hardness as CaCO3 | 130 | mg/L | -- | -- | A2340 B | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | pH | 6.96 | s.u. | H | 0.01 | A4500-H B | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Sodium Adsorption Ratio (SAR) | 3.6 | unitless | -- | -- | Calculation | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Solids, Total Dissolved TDS @ 180 C | 557 | mg/L | -- | 10 | A2540 C | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Solids, Total Suspended TSS @ 105 C | 56 | mg/L | -- | 10 | A2540 D | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Oil & Grease (HEM) | 6 | mg/L | -- | 5 | E1664A | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Sulfide | 0.09 | mg/L | -- | 0.04 | A4500-S D | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Alkalinity, Total as CaCO3 | 62 | mg/L | -- | 5 | A2320 B | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Conductivity @ 25 C | 763 | umhos/cm | -- | 10 | A2510 B | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Cyanide, Total | ND | mg/L | -- | 0.005 | Kelada mod | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Hardness as CaCO3 | 140 | mg/L | -- | -- | A2340 B | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | pH | 7.13 | s.u. | H | 0.01 | A4500-H B | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Sodium Adsorption Ratio (SAR) | 3.9 | unitless | -- | -- | Calculation | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Solids, Total Dissolved TDS @ 180 C | 629 | mg/L | -- | 10 | A2540 C | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Solids, Total Suspended TSS @ 105 C | 52 | mg/L | -- | 10 | A2540 D | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Oil & Grease (HEM) | ND | mg/L | -- | 5 | E1664A | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Sulfide | 0.09 | mg/L | -- | 0.04 | A4500-S D | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Alkalinity, Total as CaCO3 | 58 | mg/L | -- | 5 | A2320 B | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Conductivity @ 25 C | 1010 | umhos/cm | -- | 10 | A2510 B | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Cyanide, Total | ND | mg/L | -- | 0.005 | Kelada mod | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Hardness as CaCO3 | 340 | mg/L | -- | -- | A2340 B | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | pH | 7.27 | s.u. | H | 0.01 | A4500-H B | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Sodium Adsorption Ratio (SAR) | 1.9 | unitless | -- | -- | Calculation | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Solids, Total Dissolved TDS @ 180 C | 732 | mg/L | -- | 10 | A2540 C | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Solids, Total Suspended TSS @ 105 C | 20 | mg/L | -- | 10 | A2540 D | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Oil & Grease (HEM) | ND | mg/L | -- | 5 | E1664A | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Sulfide | ND | mg/L | -- | 0.04 | A4500-S D | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Alkalinity, Total as CaCO3 | 67 | mg/L | -- | 5 | A2320 B | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Conductivity @ 25 C | 832 | umhos/cm | -- | 10 | A2510 B | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Cyanide, Total | ND | mg/L | -- | 0.005 | Kelada mod | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Hardness as CaCO3 | 140 | mg/L | -- | -- | A2340 B | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | pH | 7.23 | s.u. | H | 0.01 | A4500-H B | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Sodium Adsorption Ratio (SAR) | 4.1 | unitless | -- | -- | Calculation | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Solids, Total Dissolved TDS @ 180 C | 657 | mg/L | -- | 10 | A2540 C | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Solids, Total Suspended TSS @ 105 C | 21 | mg/L | -- | 10 | A2540 D | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Oil & Grease (HEM) | ND | mg/L | -- | 5 | E1664A | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Sulfide | 0.13 | mg/L | -- | 0.04 | A4500-S D | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Alkalinity, Total as CaCO3 | 80 | mg/L | -- | 5 | A2320 B | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Conductivity @ 25 C | 1230 | umhos/cm | -- | 10 | A2510 B | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Cyanide, Total | ND | mg/L | -- | 0.005 | Kelada mod | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Hardness as CaCO3 | 210 | mg/L | -- | -- | A2340 B | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | pH | 7.84 | s.u. | H | 0.01 | A4500-H B | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Sodium Adsorption Ratio (SAR) | 5.2 | unitless | -- | -- | Calculation | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Solids, Total Dissolved TDS @ 180 C | 856 | mg/L | -- | 10 | A2540 C | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Solids, Total Suspended TSS @ 105 C | ND | mg/L | -- | 10 | A2540 D | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Oil & Grease (HEM) | ND | mg/L | -- | 5 | E1664A | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Sulfide | ND | mg/L | -- | 0.04 | A4500-S D | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Alkalinity, Total as CaCO3 | 87 | mg/L | -- | 5 | A2320 B | Aqueous |

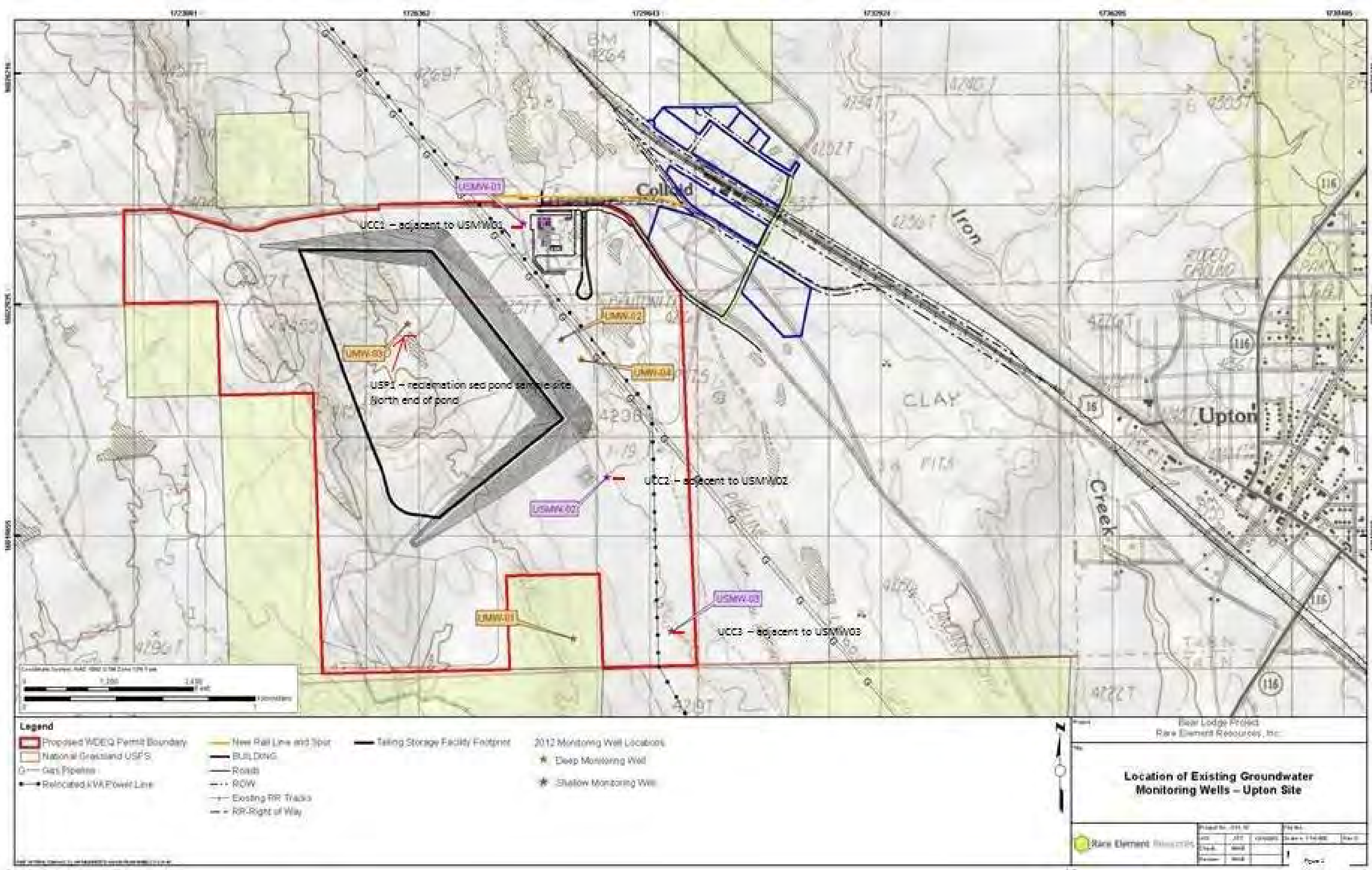
| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Conductivity @ 25 C | 1210 | umhos/cm | -- | 10 | A2510 B | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Cyanide, Total | ND | mg/L | -- | 0.005 | Kelada mod | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Hardness as CaCO3 | 210 | mg/L | -- | -- | A2340 B | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | pH | 7.96 | s.u. | H | 0.01 | A4500-H B | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Sodium Adsorption Ratio (SAR) | 5.1 | unitless | -- | -- | Calculation | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Solids, Total Dissolved TDS @ 180 C | 854 | mg/L | -- | 10 | A2540 C | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Solids, Total Suspended TSS @ 105 C | 69 | mg/L | -- | 10 | A2540 D | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Oil & Grease (HEM) | ND | mg/L | -- | 5 | E1664A | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Sulfide | 0.04 | mg/L | -- | 0.04 | A4500-S D | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Alkalinity, Total as CaCO3 | 73 | mg/L | -- | 5 | A2320 B | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Conductivity @ 25 C | 1080 | umhos/cm | -- | 10 | A2510 B | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Cyanide, Total | ND | mg/L | -- | 0.005 | Kelada mod | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Hardness as CaCO3 | 180 | mg/L | -- | -- | A2340 B | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | pH | 7.88 | s.u. | H | 0.01 | A4500-H B | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Sodium Adsorption Ratio (SAR) | 5 | unitless | -- | -- | Calculation | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Solids, Total Dissolved TDS @ 180 C | 745 | mg/L | -- | 10 | A2540 C | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Solids, Total Suspended TSS @ 105 C | 20 | mg/L | -- | 10 | A2540 D | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Oil & Grease (HEM) | ND | mg/L | -- | 5 | E1664A | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Sulfide | ND | mg/L | -- | 0.04 | A4500-S D | Aqueous |
| **Nutrients** | | | | | | | | | |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Nitrogen, Ammonia as N | ND | mg/L | -- | 0.05 | E350.1 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Nitrogen, Ammonia as N | 0.2 | mg/L | -- | 0.05 | E350.1 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Nitrogen, Ammonia as N | ND | mg/L | -- | 0.05 | E350.1 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Nitrogen, Ammonia as N | ND | mg/L | -- | 0.05 | E350.1 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Nitrogen, Ammonia as N | ND | mg/L | -- | 0.05 | E350.1 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Nitrogen, Ammonia as N | ND | mg/L | -- | 0.05 | E350.1 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Nitrogen, Ammonia as N | ND | mg/L | -- | 0.05 | E350.1 | Aqueous |
| **Radionuclides - Total** | | | | | | | | | |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Gross Alpha | 5.8 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Gross Alpha precision (±) | 2.6 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Gross Alpha MDC | 3.8 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Gross Beta | 11.1 | pCi/L | -- | -- | E900.0 | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Gross Beta precision (±) | 2 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Gross Beta MDC | 3.1 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Radium 226 | 0.22 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Radium 226 precision (±) | 0.15 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Radium 226 MDC | 0.19 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Radium 228 | 1.5 | pCi/L | U | -- | RA-05 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Radium 228 precision (±) | 0.96 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Radium 228 MDC | 1.5 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Radon 222 | -23.9 | pCi/L | U | -- | D5072-92 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Radon 222 precision (±) | 48.6 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Radon 222 MDC | 82 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Strontium 90 | 1 | pCi/L | U | -- | E905.0 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Strontium 90 precision (±) | 1.2 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC1-SW-03152012 | 3/15/2012 11:30 | Strontium 90 MDC | 2 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Gross Alpha | 10 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Gross Alpha precision (±) | 3.1 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Gross Alpha MDC | 4.2 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Gross Beta | 15.1 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Gross Beta precision (±) | 2.3 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Gross Beta MDC | 3.4 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Radium 226 | 0.3 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Radium 226 precision (±) | 0.16 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Radium 226 MDC | 0.19 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Radium 228 | 0.11 | pCi/L | U | -- | RA-05 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Radium 228 precision (±) | 0.7 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Radium 228 MDC | 1.2 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Radon 222 | -72.1 | pCi/L | U | -- | D5072-92 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Radon 222 precision (±) | 47.5 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Radon 222 MDC | 82 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Strontium 90 | 0.8 | pCi/L | U | -- | E905.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Strontium 90 precision (±) | 1.4 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC2-SW-03152012 | 3/15/2012 12:30 | Strontium 90 MDC | 2.2 | pCi/L | -- | -- | E905.0 | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | USP1-SW-03192012 | 3/19/2012 11:00 | Gross Alpha | -0.6 | pCi/L | U | -- | E900.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Gross Alpha precision (±) | 2.7 | pCi/L | -- | -- | E900.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Gross Alpha MDC | 4.6 | pCi/L | -- | -- | E900.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Gross Beta | 11.6 | pCi/L | -- | -- | E900.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Gross Beta precision (±) | 2.9 | pCi/L | -- | -- | E900.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Gross Beta MDC | 4.5 | pCi/L | -- | -- | E900.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Radium 226 | -0.03 | pCi/L | U | -- | E903.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Radium 226 precision (±) | 0.11 | pCi/L | -- | -- | E903.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Radium 226 MDC | 0.22 | pCi/L | -- | -- | E903.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Radium 228 | -0.3 | pCi/L | U | -- | RA-05 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Radium 228 precision (±) | 0.95 | pCi/L | -- | -- | RA-05 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Radium 228 MDC | 1.6 | pCi/L | -- | -- | RA-05 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Radon 222 | -89.9 | pCi/L | U | -- | D5072-92 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Radon 222 precision (±) | 72.3 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Radon 222 MDC | 124 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Strontium 90 | 0.4 | pCi/L | U | -- | E905.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Strontium 90 precision (±) | 1.4 | pCi/L | -- | -- | E905.0 | Aqueous |
| | USP1-SW-03192012 | 3/19/2012 11:00 | Strontium 90 MDC | 2.3 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Gross Alpha | 2.1 | pCi/L | U | -- | E900.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Gross Alpha precision (±) | 2.6 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Gross Alpha MDC | 4.1 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Gross Beta | 10.8 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Gross Beta precision (±) | 2.1 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Gross Beta MDC | 3.3 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Radium 226 | 0.4 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Radium 226 precision (±) | 0.15 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Radium 226 MDC | 0.16 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Radium 228 | -0.3 | pCi/L | U | -- | RA-05 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Radium 228 precision (±) | 0.7 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Radium 228 MDC | 1.2 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Radon 222 | -12.1 | pCi/L | U | -- | D5072-92 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Radon 222 precision (±) | 72.9 | pCi/L | -- | -- | D5072-92 | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Radon 222 MDC | 123 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Strontium 90 | -1.6 | pCi/L | U | -- | E905.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Strontium 90 precision (±) | 1.4 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC3-SW-03192012 | 3/19/2012 12:00 | Strontium 90 MDC | 2.5 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Gross Alpha | 1 | pCi/L | U | -- | E900.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Gross Alpha precision (±) | 2.1 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Gross Alpha MDC | 3.5 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Gross Beta | 7.5 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Gross Beta precision (±) | 2.5 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Gross Beta MDC | 4 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Radium 226 | 0.06 | pCi/L | U | -- | E903.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Radium 226 precision (±) | 0.16 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Radium 226 MDC | 0.27 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Radium 228 | 1.1 | pCi/L | U | -- | RA-05 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Radium 228 precision (±) | 1.1 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Radium 228 MDC | 1.7 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Radon 222 | -26.1 | pCi/L | U | -- | D5072-92 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Radon 222 precision (±) | 199 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Radon 222 MDC | 335 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Strontium 90 | 1.4 | pCi/L | U | -- | E905.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Strontium 90 precision (±) | 1.5 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC1-SW-04192012 | 4/19/2012 13:30 | Strontium 90 MDC | 2.5 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Gross Alpha | -1 | pCi/L | U | -- | E900.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Gross Alpha precision (±) | 2.1 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Gross Alpha MDC | 3.7 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Gross Beta | 9.6 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Gross Beta precision (±) | 2.3 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Gross Beta MDC | 3.6 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Radium 226 | -0.1 | pCi/L | U | -- | E903.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Radium 226 precision (±) | 0.09 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Radium 226 MDC | 0.23 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Radium 228 | 0.03 | pCi/L | U | -- | RA-05 | Aqueous |

| Report Name | Sample ID | Collection Date | Analyte Name | Result | Units | Qualifier | Report Limit | Method | Matrix |
|---|---|---|---|---|---|---|---|---|---|
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Radium 228 precision (±) | 1 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Radium 228 MDC | 1.7 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Radon 222 | -21.7 | pCi/L | U | -- | D5072-92 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Radon 222 precision (±) | 198 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Radon 222 MDC | 334 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Strontium 90 | 1.5 | pCi/L | U | -- | E905.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Strontium 90 precision (±) | 2 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC2-SW-04192012 | 4/19/2012 14:00 | Strontium 90 MDC | 3.2 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Gross Alpha | -0.6 | pCi/L | U | -- | E900.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Gross Alpha precision (±) | 1.7 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Gross Alpha MDC | 3 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Gross Beta | 7.8 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Gross Beta precision (±) | 2.2 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Gross Beta MDC | 3.5 | pCi/L | -- | -- | E900.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Radium 226 | -0.2 | pCi/L | U | -- | E903.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Radium 226 precision (±) | 0.12 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Radium 226 MDC | 0.29 | pCi/L | -- | -- | E903.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Radium 228 | 3.2 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Radium 228 precision (±) | 1.2 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Radium 228 MDC | 1.8 | pCi/L | -- | -- | RA-05 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Radon 222 | -17.9 | pCi/L | U | -- | D5072-92 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Radon 222 precision (±) | 197 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Radon 222 MDC | 331 | pCi/L | -- | -- | D5072-92 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Strontium 90 | 0.6 | pCi/L | U | -- | E905.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Strontium 90 precision (±) | 1.6 | pCi/L | -- | -- | E905.0 | Aqueous |
| | UCC3-SW-04192012 | 4/19/2012 15:00 | Strontium 90 MDC | 2.6 | pCi/L | -- | -- | E905.0 | Aqueous |


USMW-01
UCC1 – adjacent to USMW01
Colloid
UMW-02
UMW-03
UMW-04
USP1 – reclamation sed pond sample site
North end of pond
UCC2 – adjacent to USMW02
USMW-02
USMW-03
UMW-01
UCC3 – adjacent to USMW03
Iron
CLAY
Upton
Creek
Legend
Proposed WDEQ Permit Boundary
National Grassland USFS
Gas Pipeline
Relocated kVA Power Line
New Rail Line and Spur
BUILDING
Roads
ROW
Existing RR Tracks
RR-Right of Way
Tailing Storage Facility Footprint
2012 Monitoring Well Locations
Deep Monitoring Well
Shallow Monitoring Well
Bear Lodge Project
Rare Element Resources, Inc.
Location of Existing Groundwater
Monitoring Wells – Upton Site
Rare Element Resources

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# ADDENDUM D10-2-G

2012 WILDLIFE REPORT

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March 24, 2013

**Rare Element Resources' Proposed Bear Lodge Project, Upton Plant Site: U.S. Army Corps of Engineers Aquatic Resources Inventory Report – Wildlife Information**

**Introduction and Background**

Rare Element Resources (RER) has proposed to open a new mine to develop rare earth resources and precious metals in Crook County, Wyoming. In conjunction with the proposed mine operation, RER has also proposed a site approximately 1.0 mile west of Upton, Wyoming in northern Weston County to construct and operate a hydrometallurical plant and tailings storage facility for the mine. The proposed project area for this facility encompasses approximately 3.8 square miles, overlapping all or portions of Sections 20, 28, 29, 32, and 33 in Township 48 North, Range 65 West.

Throughout the planning of the project (fall 2011 through spring 2013), frequent and thorough agency consultation has occurred with the U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), Wyoming Game and Fish Department (WGFD), and Wyoming Department of Environmental Quality-Land Quality Division (WDEQ-LQD) to develop and implement a wildlife baseline study plan. The objective of the plan is to identify and conduct all required wildlife surveys appropriate for the habitats and species associated with the project site. The actual survey efforts were initiated in winter 2011/2012, were conducted throughout 2012, and are scheduled to continue in 2013 as well. A summary of all wildlife baseline monitoring protocols are described below and are largely based on the guidelines required for permitting and environmental analysis through state and federal agencies (primarily, Guideline 5 of the WDEQ-LQD with consultation of approval from the USFWS, USFS, and WGFD).

**I. Species List**

A general species list for the project area (proposed permit area and surrounding 2.0-mile perimeter) is maintained during all visits with notes on species observations or sign, number of individuals, location, and sex and age (when possible). Personnel are especially vigilant for federally listed species (including endangered, threatened, petitioned, and candidate species), other species of special concern listed with the WGFD and USFS, and habitats within the monitoring area that could support those species. Prior to initiating field studies, a potential vertebrate species list was developed. Information on species' range and occurrence was obtained from available published literature and results from similar surveys conducted in the same general vicinity. Such sources included standard field guides, regional faunal texts and checklists, previous wildlife studies in the vicinity, and any available state and federal agency data.

**II. Habitat Description**

Vegetation habitats within the proposed project area are recorded and described in general terms as to the availability of high-value, unique, or critical wildlife habitats. Every effort will be made to maintain consistency between the habitat terminology/designations used for the vegetation (conducted by a separate contractor) and wildlife baseline efforts.

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### III. Big Game

A classification survey to determine the age and sex of big game animals, primarily pronghorn (*Antilocapra americana*) and mule deer (*Odocoileus hemionus*), was conducted in January 2012. One additional aerial survey, targeting the general distribution of pronghorn and mule deer, was conducted in early March 2012. Both surveys used a helicopter to systematically fly over all woodlands and open habitats within the proposed permit area and surrounding 2.0-mile perimeter. Both surveys targeted days with adequate snow cover, good light conditions, and favorable weather. The locations (to quarter-section) and group size of all relevant sightings (including species other than big game) were plotted along with the habitat associations on 1:24,000 topographic maps. In addition to the specific big game survey efforts detailed above, ICF biologists are documenting all big game observations within the proposed permit area and surrounding survey perimeter during each site visit throughout the baseline study period. Data collected includes the species, number of animals, herd location to quarter-quarter section, and habitat type.

### IV. Upland Gamebirds

Surveys were conducted in spring 2012 and will be continued in spring 2013 for greater sage-grouse (*Centrocercus urophasianus*) and sharp-tailed grouse (*Tympanuchus phasianellus*) leks in suitable upland gamebird habitats within the proposed permit area and surrounding 2.0-mile perimeter. All upland gamebird habitats and known sage-grouse leks (Upton 3) within 2.0 miles of the proposed permit area are visited three times (one aerial and two ground surveys) each spring to search for and count displaying grouse. Surveys are conducted when favorable weather conditions (no precipitation with little or no wind) prevail, beginning no earlier than 30 minutes before sunrise and lasting no longer than 1 hour after sunrise. To search for new leks, biologists drive existing roads and two-tracks through suitable habitats in the survey area, stopping at intervals of 1.0 mile or less to scan and listen for displaying grouse. Other species, such as the Hungarian/gray partridge (*Perdix perdix*), wild turkey (*Meleagris gallopavo*), and mourning dove (*Zenaida macroura*), could also be present in the region. All seasonal observations of gamebirds and their sign are recorded to determine the use of the proposed permit area by these species throughout the year, with special attention during the breeding, brood-rearing, and winter months. All new leks/display sites, nests, or observations of upland game birds are recorded with UTM coordinates using GPS receivers throughout the duration of the baseline study.

### V. Raptors

Searches for nesting raptors were conducted during the 2012 breeding season and will be continued in spring/summer 2013 within the proposed permit area and a 2.0-mile perimeter. Efforts consist of pedestrian searches as well as remote observations from vantage points using binoculars and a spotting scope. Nests are mapped in the field using hand-held GPS receivers; those efforts are timed to prevent disruption of active nest sites. All known nests are monitored to determine their nesting status (active/inactive) for the year. Active nests are visited in June or July to obtain production information. Nest checks during all periods will be brief and conducted from a distance to avoid flushing raptors from their nests (per Grier and Fyfe 1987[1]).

[1] Grier, J.W. and R.W. Fyfe. 1987. Preventing research and management disturbance. Pages 173-182 in B.A. Giron Pendleton, B.A. Milsap, K.W. Cline, and D.M. Bird, editors. Raptor management techniques manual. National Wildlife Federation, Washington, D.C.

ICF biologists also document all raptor sightings in and within 2.0 miles of the permit area during the baseline survey period. Seasonal raptor use of the area is determined by reviewing existing data, and compiling results from specific surveys and incidental observations. Due to limited habitat, specifically a lack of trees in and within 2.0 miles of the proposed permit area, surveys specifically targeting bald eagle (*Haliaeetus leucocephalus*) winter roosts are not conducted. However, biologists watch for this species (especially during other winter surveys and early spring surveys) and record any incidental bald eagle sightings, including the location, number, age, behavior, and habitat association.

### VI. Breeding Birds

Breeding bird point-count transect surveys were conducted in June 2012 over the course of two mornings within the proposed permit area and approximately a 0.5-mile perimeter. Surveys follow the Rocky Mountain Bird Observatory protocols (RMBO 2009[2]), starting no earlier than 30 minutes before sunrise and are completed by 1100 hours. Each point count station utilized a 10-minute detection period with at least eight stations across one or two transects ($n$=16) for all sampled habitat types. Three habitat types were sampled: 1) bottomland shrubland (primarily mixed greasewood [*Sarcobatus vermiculatus*] and big sagebrush [*Artemisia tridentata*]), 2) upland shrublands (big sagebrush), and 3) grasslands/agricultural fields. Precise coordinates of point-count stations were determined using a GPS receiver. The survey order of plots was rotated each day to minimize bias in the results due to time of day. Surveys were conducted only under favorable (no precipitation with little or light wind) weather conditions. Binoculars and pre-survey reviews of bird songs were used to aid with identification by sight and sound, respectively. Results describe the avian species richness and relative abundance within each habitat type in the proposed permit area and the surrounding 0.5-mile perimeter. Relative abundance was determined and defined as the average number of birds recorded per transect. Species richness represented the total number of species recorded in each habitat over the sampling period.

### VII. Other Avian Species

*Waterfowl.* Surveys for waterfowl, shorebirds, and other waterbird species were conducted during both spring and summer 2012 at wetland habitats (ponds from old mining pits) within the surrounding 1.0-mile perimeter of the proposed permit area. Two migration surveys from late April through late May, and two brood surveys from mid-June through mid-July were conducted by viewing ponds from a vehicle parked at a vantage point near each survey site. Observers counted and identified to species and sex (when possible) all wetland species seen flying overhead or in association with the water bodies surveyed. During summer surveys, the number of broods and number of young of each species were recorded.

*Mountain Plovers.* Areas of suitable mountain plover (*Charadrius montanus*) habitat in or within 0.25 mile of the proposed permit area were searched in accordance with the USFWS Mountain Plover Survey Guidelines in spring 2012. Areas suitable for plovers were searched from a vehicle (staying on established roads and trails within the survey area) on three survey dates spaced approximately 14 days apart between May 1 and June 15. The surveys were conducted between sunrise and 1000 hours or from 1730 to sunset on each survey date.

[2] Hanni, D. J., C. M. White, J. A. Blakesley, G. J. Levandoski, and J. J. Birek. 2009. Point Transect Protocol. Unpublished report. Rocky Mountain Bird Observatory, Brighton, CO. 37 pages.

### VIII. Lagomorphs and Swift Fox

*Lagomorphs.* Nocturnal spotlight surveys for lagomorphs (rabbits and hares) were completed on two consecutive nights within the survey area in early fall 2012. A vehicular survey route covered all major habitats within the proposed permit area and the surrounding 1.0-mile perimeter. Each night, the driving route began no earlier than 30 minutes after sunset. The driver traveled at approximately 5 mph while a spotlight was continuously swept back and forth across and along the travel route. Data collected included the number and species of animals observed, general location, and habitat. All survey efforts were coordinated with the local WGFD game warden.

*Swift Fox.* Nocturnal spotlight surveys for swift fox (*Vulpes velox*) will be completed within the survey area on two consecutive nights in spring/summer 2013. A vehicular survey route will cover all major habitats within the proposed permit area and the surrounding 1.0-mile perimeter. Each night, the driving route will begin no earlier than 30 minutes after sunset. The driver will travel at approximately 5 mph while a spotlight is continuously swept back and forth across and along the travel route. Data collected will include the number of animals observed, general location, and habitat. All survey efforts will be coordinated with the local WGFD game warden.

### IX. Other Mammals

*Bats.* Potential bat habitats (e.g., ponds and bottomland corridors, rock outcrops, and trees) will be surveyed, using automated bat signal identification devices on two consecutive nights in spring/summer 2013 by authorized personnel permitted with the USFS. All USFS policies related to bat conservation and protection along with standard precautions to prevent undue disturbance to hibernating or breeding/nursing bats will be followed during the entire baseline period. Surveys are intended to determine whether bat species are present or absent and their relative abundance, but further determination of the extent of use (e.g., mist netting) is not included in the monitoring plan. Biologists will also watch for and record any activity of bats hunting over tree stands or water bodies within the proposed expansion areas and 1.0-mile perimeter during all baseline monitoring site visits.

The occurrence of predators, furbearers, small rodents, and other mammals is documented through review of existing data and literature, as well as incidental sightings of individuals or sign recorded throughout the baseline inventory period. Beyond the specific species or taxa presented above, no other specific surveys will be conducted for mammalian species.

### X. Reptiles and Amphibians

Due to the lack of sufficient habitat and the abundance of previous and existing disturbance (e.g., bentonite mining, Upton Industrial Park, and county roads and state highways) in and within the vicinity of the Upton Plant Site, no herptile surveys are planned for the Upton Plant survey area. However, all incidental observations that occur during the baseline inventory period are recorded.

### XI. Aquatic Species

Due to the absence of perennial streams and adequate fisheries habitat, no aquatics surveys are being conducted for the Upton Plant site.

**RARE ELEMENT RESOURCES' PROPOSED BEAR LODGE PROJECT, UPTON PLANT SITE: DOCUMENTED TO DATE* WILDLIFE BASELINE MAMMALIAN SPECIES LIST**

| Common Name | Scientific Name |
|---|---|
| *HARES AND RABBITS* | |
| Cottontail species | *Sylvilagus* spp. |
| White-tailed jackrabbit | *Lepus townsendii* |
| *RODENTS* | |
| Thirteen-lined ground squirrel | *Spermophilus tridecemlineatus* |
| Muskrat | *Ondatra zibethicus* |
| *CARNIVORES* | |
| Coyote | *Canis latrans* |
| Red fox | *Vulpes vulpes* |
| Badger | *Taxidea taxus* |
| *UNGULATES* | |
| Mule deer | *Odocoileus hemionus* |
| Pronghorn | *Antilocapra americana* |

* Detected in or within 2.0-mile of the proposed Upton Plant Site permit area (Sections 20, 28, 29, 32, and 33 in Township 48 North, Range 65 West) between winter 2011/2012 and winter 2012/2013.

**RARE ELEMENT RESOURCES' PROPOSED BEAR LODGE PROJECT, UPTON PLANT SITE: DOCUMENTED TO DATE* WILDLIFE BASELINE AVIAN SPECIES LIST**

| **Common Name** | **Scientific Name** |
|---|---|
| *GREBES* | |
| Eared grebe | *Podiceps nigricollis* |
| Pied-billed grebe | *Podilymbus podiceps* |
| *HERONS* | |
| Great blue heron | *Ardea herodias* |
| *SWANS, GEESE, AND DUCKS* | |
| Canada goose | *Branta canadensis* |
| Mallard | *Anas platyrhynchos* |
| Gadwall | *Anas strepera* |
| Northern pintail | *Anas acuta* |
| Green-winged teal | *Anas crecca* |
| Blue-winged teal | *Anas discors* |
| Cinnamon teal | *Anas cyanoptera* |
| American wigeon | *Anas americana* |
| Northern shoveler | *Anas clypeata* |
| Redhead | *Aythya americana* |
| Ring-necked duck | *Aythya collaris* |
| Canvasback | *Aythya valisineria* |
| Bufflehead | *Bucephala albeola* |
| Common goldeneye | *Bucephala clangula* |
| Ruddy duck | *Oxyura jamaicensis* |
| Common merganser | *Mergus merganser* |
| *DIURNAL RAPTORS* | |
| Turkey vulture | *Cathartes aura* |
| Bald eagle | *Haliaeetus leucocephalus* |
| Northern harrier | *Circus cyaneus* |
| Red-tailed hawk | *Buteo jamaicensis* |
| Rough-legged hawk | *Buteo lagopus* |
| Golden eagle | *Aquila chrysaetos* |
| American kestrel | *Falco sparverius* |
| *GALLINACEOUS BIRDS* | |
| Sharp-tailed grouse | *Pedioecetus phasianellus* |
| Greater sage-grouse | *Centrocercus urophasianus* |
| Wild turkey | *Meleagris gallopavo* |
| *CRANES, RAILS, AND COOTS* | |
| American coot | *Fulica americana* |
| *SHOREBIRDS, GULLS, AND TERNS* | |
| American avocet | *Recurvirostra americana* |
| Killdeer | *Charadrius vociferus* |
| Upland sandpiper | *Bartramia longicauda* |
| Greater yellowlegs | *Tringa melanoleuca* |
| Lesser yellowlegs | *Tringa flavipes* |
| Spotted sandpiper | *Actitis macularia* |

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**RARE ELEMENT RESOURCES' PROPOSED BEAR LODGE PROJECT, UPTON PLANT SITE: DOCUMENTED TO DATE* WILDLIFE BASELINE AVIAN SPECIES LIST (Continued)**

| **Common Name** | **Scientific Name** |
|---|---|
| *SHOREBIRDS, GULLS, AND TERNS (Continued)* | |
| Wilson's phalarope | *Phalaropus tricolor* |
| Least sandpiper | *Calidris minutilla* |
| *PIGEONS AND DOVES* | |
| Rock dove | *Columba livia* |
| Mourning dove | *Zenaida macroura* |
| *FLYCATCHERS* | |
| Say's phoebe | *Sayornis saya* |
| Eastern kingbird | *Tyrannus tyrannus* |
| *LARKS* | |
| Horned lark | *Eremophila alpestris* |
| *SWALLOWS* | |
| Barn swallow | *Hirundo rustica* |
| *JAYS, MAGPIES, AND CROWS* | |
| American crow | *Corvus brachyrhynchos* |
| *THRUSHES* | |
| Mountain bluebird | *Sialia currucoides* |
| *MIMIC THRUSHES* | |
| Sage thrasher | *Oreoscoptes montanus* |
| *TOWHEES, SPARROWS, JUNCOS, AND LONGSPURS* | |
| Spotted towhee | *Pipilo maculatus* |
| Brewer's sparrow | *Spizella breweri* |
| Vesper sparrow | *Pooecetes gramineus* |
| Lark sparrow | *Chondestes grammacus* |
| Lark bunting | *Calamospiza melanocorys* |
| Grasshopper sparrow | *Ammodramus savannarum* |
| *BLACKBIRDS, MEADOWLARKS, AND ORIOLES* | |
| Red-winged blackbird | *Agelaius phoeniceus* |
| Western meadowlark | *Sturnella neglecta* |
| Yellow-headed blackbird | *Xanthocephalus xanthocephalus* |
| Brewer's blackbird | *Euphagus cyanocephalus* |
| Brown-headed cowbird | *Molothrus ater* |

* Detected in or within 2.0-mile of the proposed Upton Plant Site permit area (Sections 20, 28, 29, 32, and 33 in Township 48 North, Range 65 West) between winter 2011/2012 and winter 2012/2013.

**RARE ELEMENT RESOURCES' PROPOSED BEAR LODGE PROJECT, UPTON PLANT SITE: DOCUMENTED TO DATE* WILDLIFE BASELINE AMPHIBIAN AND REPTILE SPECIES LIST**

| Common Name | Scientific Name |
|---|---|
| *FROGS AND TOADS* | |
| Boreal chorus frog | *Pseudacris triseriata* |

* Detected in or within 2.0-mile of the proposed Upton Plant Site permit area (Sections 20, 28, 29, 32, and 33 in Township 48 North, Range 65 West) between winter 2011/2012 and winter 2012/2013.

# ADDENDUM D10-2-H

U.S. ARMY CORPS OF ENGINEERS JURISDICTIONAL DETERMINATION

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**DEPARTMENT OF THE ARMY**
CORPS OF ENGINEERS, OMAHA DISTRICT
WYOMING REGULATORY OFFICE
2232 DELL RANGE BOULEVARD, SUITE 210
CHEYENNE WY 82009-4942

REPLY TO
ATTENTION OF

December 30, 2013

Wyoming Regulatory Office

Donald W. and Judy L. Bartels
P.O. Box 432
Upton, Wyoming 82730

Paul D. Bergstrom
Rare Element Resources, Inc.
225 Union Boulevard, Suite 250
Lakewood, Colorado 80228

Dear Mr. and Mrs. Bartels and Mr. Bergstrom:

This letter is in response to a request we received on May 6, 2013, from Rare Element Resources, Inc. (RER) for a jurisdictional determination concerning aquatic sites within the proposed Bear Lodge Project –Upton Plant Site, Wyoming Department of Environmental Quality (WDEQ) mine permit area located northwest of Upton. The review area includes the property located in all or portions of Sections 28, 29, 32 and 33, Township 48 North, Range 65 West, Weston County, Wyoming.

The U.S. Army Corps of Engineers regulates the placement of dredged and fill material into waters of the United States in accordance with Section 404 of the Clean Water Act (33 U.S.C. 1344). The term "waters of the United States" has been broadly defined by statute, regulation, and judicial interpretation to include all waters that were, are, or could be used in interstate commerce such as streams, reservoirs, lakes and adjacent wetlands. The Corps regulations are published in the *Code of Federal Regulations* as 33 CFR Parts 320 through 332. Information on Section 404 program requirements in Wyoming can be obtained from our web site at http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Wyoming.aspx

We have reviewed the information submitted by RER, including the *Aquatic Resources Inventory* report prepared by BKS Environmental Associates, Inc. (BKS) dated April 29, 2013, as well as additional information in our office. Based on our evaluation of the site on August 1, 2013, available maps and information, it appears that potential waters of the U.S. occur within the review area boundary: approximately 10,666 feet of an ephemeral stream (Coyote Creek), 7.54 acres of adjacent palustrine emergent wetlands, 0.39 acre of palustrine unconsolidated bottom non-wetland waters, 1.33 acres of reclaimed bentonite ponds and impoundments, and 6.62 acres of palustrine emergent wetland located in upper watershed drainages.

On June 5, 2007, our Headquarters in Washington D.C. (HQUSACE) implemented guidance that requires an evaluation and coordination procedure before exerting jurisdiction over many streams and wetlands. The guidance was based primarily on a ruling by the U.S. Supreme Court on June 19, 2006, in the case of *Rapanos et ux., et al. v. United States* (Nos. 04-1034 and 04-1384) and the Ninth Circuit Court on March 12, 2001, in the case of *Headwaters Inc. v. Talent Irrigation District (*243 F.3d 526 (9th Cir. 2001)).

We have determined that Coyote Creek and its adjacent wetlands and waters do not meet the Significant Nexus standard when evaluating their relationship to the nearest Traditional Navigable Water. In addition, the remaining aquatic resource features described above are isolated waters with no substantial nexus to interstate commerce. **Therefore, the review area, as depicted in *Addendum 1: 2012 Aquatic Resources Inventory Maps*, does not contain any areas that meet the definition of waters of the United States as defined at 33 CFR Part 328.3(a).**

In the March 28, 2000, edition of the *Federal Register* (Vol. 65, No. 60), the Corps implemented an administrative appeals process for jurisdictional determinations. This letter serves as an approved jurisdictional determination. In addition, the *Approved Jurisdictional Determination Forms* completed for this area are attached. The affected parties with legal interests in the property may appeal any determination to the Northwestern Division Appeals Officer, Ms. Mary Hoffman, by completing the attached Notification of Administrative Appeal Options and Process (NAO) form. Section "D" of the NAO explains the procedures for appeal. The NAO form must be submitted to Ms. Hoffman at the address shown on the NAO form prior to **March 3, 2014**, or forfeit the right to an administrative appeal.

As a result of this analysis, we have determined that Department of the Army authorization is not required for construction activities within the review area, because it does not require any discharges of fill material into waters of the United States. This determination does not eliminate the requirement to obtain any other applicable federal, state, tribal, or local permits that may require aquatic habitat mitigation (e.g., federal authorities must comply with Executive Order 11990). Any deviations from the proposed plan for the project review area, provided as of May 6, 2013, could require authorization from this office.

Thank you for your interest in cooperating with requirements of the U.S. Army Corps of Engineers' regulatory program. Please contact Ms. Paige Wolken at (307) 772-2300 and reference file NWO-2013-02114 if you have any questions.

Sincerely,

Matthew A. Bilodeau

Matthew A. Bilodeau
Program Manager
Wyoming Regulatory Office

Enclosure

Omaha District, Regulatory Branch, Wyoming Regulatory Office is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete a Customer Service Survey found on our website http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Wyoming.aspx Paper copies of the survey are also available upon request for those without Internet access.

**APPROVED JURISDICTIONAL DETERMINATION FORM**
**U.S. Army Corps of Engineers**

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): November 22, 2013**

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Omaha District, Wyoming Regulatory Office, Rare Element Resources, Inc., & Mr. & Mrs. Don Bartels, Upton Site, NWO-2013-02114**

**C. PROJECT LOCATION AND BACKGROUND INFORMATION: Isolated Waters.**
**The review area is located in Sections 28, 29, 32, and 33 Township 48 North, Range 65 West, Sixth Principle Meridian; located 2 miles northwest of Upton on Buffalo Creek Road.**

State: Wyoming County/parish/borough: Weston City: West of Upton
Center coordinates of site (lat/long in degree decimal format): Lat. 44.10750N; Long. -104.66482W
Universal Transverse Mercator: NAD83
Name of nearest waterbody: Iron Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Cheyenne River, SD
Name of watershed or Hydrologic Unit Code (HUC): Beaver, Wyoming, South Dakota 10120107
Drainage area: 1700 square miles

- ☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- ☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

- ☒ Office (Desk) Determination. Date: October 28, 2013, by PMW
- ☒ Field Determination. Date(s): **August 1, 2013, by PMW**

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

- ☐ Waters subject to the ebb and flow of the tide.
- ☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):** [1]

- ☐ TNWs, including territorial seas
- ☐ Wetlands adjacent to TNWs
- ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
- ☐ Non-RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- ☐ Impoundments of jurisdictional waters
- ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

**b. Identify (estimate) size of waters of the U.S. in the review area:**
Non-wetland waters: linear feet: width (ft) and/or acres.
Wetlands: acres.

**c. Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
Elevation of established OHWM (if known): unknown.

**2. Non-regulated waters/wetlands (check if applicable):**[3]

- ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: A wetland and an impoundment with wetland characteristics (based on 1987 Manual Delineation criteria) occur along two unnamed upland drainages to Coyote Creek (see features labeled 109 and W9 on attached Map1). A wetland (W8)

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

also occurs on an unnamed upland drainage to Beaver Creek. The three unnamed drainages, within the review area, contain no OHWM. A total of three reclaimed bentonite pit ponds (W5, W10 and 103) also occur within the review area with no hydrologic surface connection to a near by nonRPW. These aquatic resources are shown and listed on the attached map and table. Upland (non-wetland) areas separate all features from jurisdictional tributaries. These aquatic resources are isolated, intrastate, non-navigable waters not utilized for recreation or industrial purposes.

SECTION III: CWA ANALYSIS

**A. TNWs AND WETLANDS ADJACENT TO TNWs**

**The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.**

**1. TNW**
Identify TNW:

Summarize rationale supporting determination: .

**2. Wetland adjacent to TNW**
Summarize rationale supporting conclusion that wetland is "adjacent": .

**B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):**

**This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.**

**The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.**

**A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.**

**If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.**

**1. Characteristics of non-TNWs that flow directly or indirectly into TNW**

**(i) General Area Conditions:**
Watershed size: **square miles**
Drainage area: **square miles**
Average annual rainfall: inches
Average annual snowfall: inches

**(ii) Physical Characteristics:**
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

(b) General Tributary Characteristics (check all that apply):
**Tributary** is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

**Tributary** properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

**(iii) Chemical Characteristics:**

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
[6] A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7] Ibid.

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

**(iv) Biological Characteristics. Channel supports (check all that apply):**

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

**2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

**(i) Physical Characteristics:**

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain: .
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**
Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

**(ii) Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: .

**(iii) Biological Characteristics. Wetland supports (check all that apply):**

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

**3. Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

| Directly abuts? (Y/N) | Size (in acres) | Directly abuts? (Y/N) | Size (in acres) |
|---|---|---|---|

Summarize overall biological, chemical and physical functions being performed: .

**C. SIGNIFICANT NEXUS DETERMINATION**

**A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.**

**Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:**
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

**Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:**

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

**D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):**

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

**3. Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

**4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
- ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

**5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

**6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

**7. Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
- ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
- ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

**E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]**
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

**Identify water body and summarize rationale supporting determination:** .

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[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☒ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: 1.33acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: 6.62acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

**SECTION IV: DATA SOURCES.**

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply** - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:Aquatic Resources Inventory, Rare Element Resources, Inc., Bear Lodge Project, Upton Plant Site, prepared for Rare Element Resources, April 29, 2013, BKS Environmental Associates, Inc., Gillette, Wyoming.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☒ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:7.5 minute topographic map for the Upton West , WYO Quadrangle.
☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☒ National wetlands inventory map(s). Cite name:Upton West , WYO Quadrangle, 1992.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date):False color infrared imagery for theUpton West quadrangle from 2001 & 2009 available on the University of Wyoming Geographic Information Service Center's website http://www.sdvc.uwyo.edu/data.htm .
or ☒ Other (Name & Date):Recent and older satellite imagery of the area available at Google Earth.
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☒ Other information (please specify): .

7

**B. ADDITIONAL COMMENTS TO SUPPORT JD:** These isolated aquatic resources are located within 1 mile of a nonRPW, Coyote Creek, which has been determined to be non-jurisdictional in a separate but related AJD. They are 58 aerial miles and 145 river miles from the nearest TNW. All aquatic resource features described in II(B)(2) are isolated from other surface waters with no connection to interstate commerce. Determinations were made based on CWA rules and regulations (CFR 33, Parts 320-332) and the June 2007 U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook

Bentonite soils are made up of swelling clays that hold moisture and prohibit most subsurface flow between isolated features.

The reclaimed bentonite mining ponds are not considered "preamble waters" because they have been reclaimed and/or abandoned for >5 years

HQ review completed Nov 12, 2013. EPA concurred with this determination on November 22, 2013.

Table 1. Isolated Waters Locations and acreages (NWO-2013-02114)

| Map ID | Latitude | Longitude | PEM wetland acres | pond/other waters |
|---|---|---|---|---|
| 109 | 44.106716 | -104.672754 | 0.3 | na/ |
| W9 | 44.104894 | -104.672777 | 2.97 | n/a |
| W8 | 44.094287 | -104.671028 | 0.45 | n/a |
| W5 | 44.109662 | -104.664214 | 0.72 | 0.52 |
| W10 | 44.110008 | -104.662549 | 0.38 | 0.36 |
| 103 | 44.106975 | -104.66083 | 1.8 | 0.45 |
| Totals | | | 6.62 | 1.33 |

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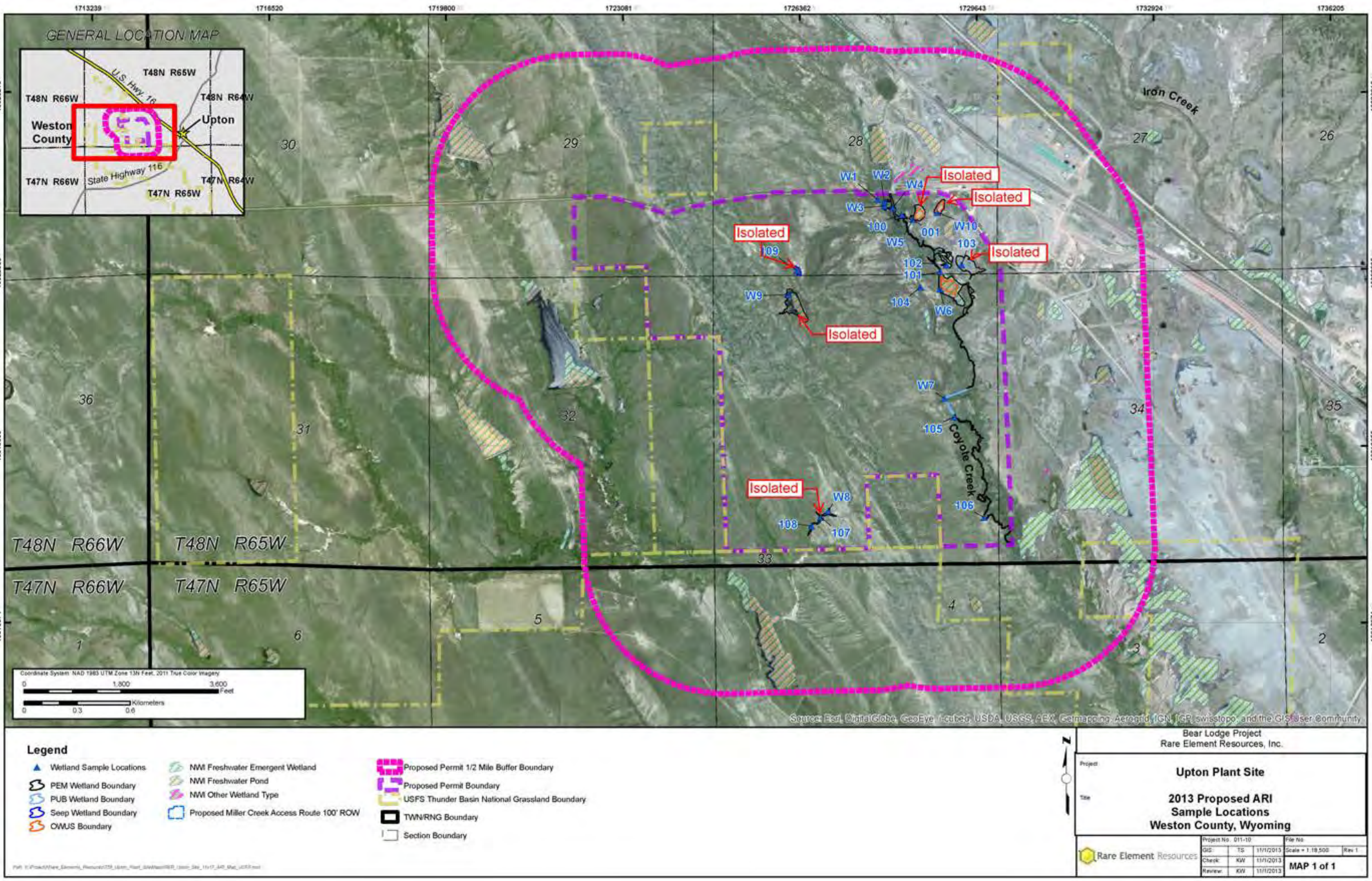
GENERAL LOCATION MAP
T48N R65W
T48N R66W
T48N R64W
U.S. Hwy. 16
Weston County
Upton
State Highway 116
T47N R66W
T47N R65W
T47N R64W
Iron Creek
Coyote Creek
Isolated
W1
W2
W3
W4
W5
W6
W7
W8
W9
W10
100
001
101
102
103
104
105
106
107
108
109
T48N R66W
T48N R65W
T47N R66W
T47N R65W
Coordinate System: NAD 1983 UTM Zone 13N Feet, 2011 True Color Imagery
0 1,800 3,600 Feet
0 0.3 0.6 Kilometers
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Legend
Wetland Sample Locations
PEM Wetland Boundary
PUB Wetland Boundary
Seep Wetland Boundary
OWUS Boundary
NWI Freshwater Emergent Wetland
NWI Freshwater Pond
NWI Other Wetland Type
Proposed Miller Creek Access Route 100' ROW
Proposed Permit 1/2 Mile Buffer Boundary
Proposed Permit Boundary
USFS Thunder Basin National Grassland Boundary
TWN/RNG Boundary
Section Boundary
N
Bear Lodge Project
Rare Element Resources, Inc.
Project
Upton Plant Site
Title
2013 Proposed ARI
Sample Locations
Weston County, Wyoming
Rare Element Resources
Project No. 011-10
File No.
GIS: TS 11/1/2013
Check: KW 11/1/2013
Review: KW 11/1/2013
Scale = 1:18,500
Rev 1
MAP 1 of 1

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**APPROVED JURISDICTIONAL DETERMINATION FORM**
**U.S. Army Corps of Engineers**

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): November 21, 2013**

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER:Omaha District, Wyoming Regulatory Office, Rare Element Resources, Inc., & Mr. & Mrs. Don Bartels, Upton Site, NWO-2013-02114**

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:NonRPW- negative Signficant Nexus finding. The review area is located in Sections 28, 29, 32, and 33 Township 48 North, Range 65 West, Sixth Principle Meridian; located 2 miles northwest of Upton on Buffalo Creek Road.**

State:Wyoming County/parish/borough:WestonCity:West of Upton
Center coordinates of site (lat/long in degree decimal format): Lat.44.10750N; Long.-104.66482W
Universal Transverse Mercator: NAD83
Name of nearest waterbody: Iron Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows:Cheyenne River, SD
Name of watershed or Hydrologic Unit Code (HUC):Beaver, Wyoming, South Dakota 10120107
Drainage area: 1700 square miles

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

☒ Office (Desk) Determination. Date:October 28, 2013, by PMW
☒ Field Determination. Date(s): **August 1, 2013, by PMW**

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. *[Required]*

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **Are no** *"waters of the U.S."* within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. *[Required]*

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):** [1]

☐ TNWs, including territorial seas
☐ Wetlands adjacent to TNWs
☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
☐ Non-RPWs that flow directly or indirectly into TNWs
☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
☐ Impoundments of jurisdictional waters
☐ Isolated (interstate or intrastate) waters, including isolated wetlands

**b. Identify (estimate) size of waters of the U.S. in the review area:**

Non-wetland waters: linear feet: width (ft) and/or acres.
Wetlands: acres.

**c. Limits (boundaries) of jurisdiction** based on: **Pick List**
Elevation of established OHWM (if known):unknown.

**2. Non-regulated waters/wetlands (check if applicable):**[3]

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: Coyote Creek an ephemeral tributary and its abutting wetlands (see attached table and maps) with no significant nexus to a TNW .

**SECTION III: CWA ANALYSIS**

**A. TNWs AND WETLANDS ADJACENT TO TNWs**

**The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.**

**1. TNW**
Identify TNW: .

Summarize rationale supporting determination: .

**2. Wetland adjacent to TNW**
Summarize rationale supporting conclusion that wetland is "adjacent": .

**B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):**

**This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.**

**The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.**

**A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.**

**If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.**

**1. Characteristics of non-TNWs that flow directly or indirectly into TNW**

**(i) General Area Conditions:**
Watershed size: 9 **square miles**
Drainage area: 4.48 **square miles**
Average annual rainfall: total precip. is 14.43 inches
Average annual snowfall: 43 inches

**(ii) Physical Characteristics:**
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☒ Tributary flows through **2** tributaries before entering TNW.

Project waters are **30 (or more)** river miles from TNW.
Project waters are **5-10** river miles from RPW.
Project waters are **30 (or more)** aerial (straight) miles from TNW.
Project waters are **2-5** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: Project entirely within the state of Wyoming.

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

2

Identify flow route to TNW[5]: Coyote Creek is a tributary to Iron Creek, a tributary to Beaver Creek, a tributary to the Cheyenne River, a traditional navigable water in South Dakota. .
Tributary stream order, if known: 2/3.

(b) General Tributary Characteristics (check all that apply):
**Tributary** is: ☒ Natural
☐ Artificial (man-made). Explain: .
☒ Manipulated (man-altered). Explain: Some agricultural and industrial modifications - channelization. A couple impoundments are located down stream of review area.

**Tributary** properties with respect to top of bank (estimate):
Average width: 2-6 feet
Average depth: ca. 0.5- 1 feet
Average side slopes: **2:1.**

Primary tributary substrate composition (check all that apply):
☒ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☒ Vegetation. Type/% cover:
☒ Other. Explain: bentonite clay.

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Well vegetated and stable.
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Meandering**
Tributary gradient (approximate average slope): 1-2 %

(c) Flow:
Tributary provides for: **Ephemeral flow**
Estimate average number of flow events in review area/year: **2-5**
Describe flow regime: Stream flow is ephemeral - based only on snow melt and precipitation. Flow occurs in late spring and during large precipitation events .
Other information on duration and volume: Long term land owner, Don Bartels (PC, July 2010), has observed that Coyote Creek flows with spring runoff and after a heavy rainstorm - very infrequent. Most years are dry years where less than half of the time it would flow (after a rain event) in the summer. He stated that on the average, Coyote Creek trickles for about a month to Iron Creek (nearest RPW), otherwise the bentonite clays hold the water in depressions. The Surface Water Hydrology report for the site, completed by WWC Engineering (July 2013) stated that the streams in the review area only flow in response to snow melt and precipitation and that evaporation exceeds annual precipitation. Water quality sampling in Coyote Creek was conducted only in March and April when surface water was present and flowing. No flow was observed during May and June 2012 (BKS, April 2013). Coyote Creek was observed to flow less than 1 cfs for no more than 3 months in 2013, a high precipitation year (PC, Kris Thompson August 2013). Swelling clays tend to hold water in pockets or deepened sections of the creek where no flow is perceptable. .

Surface flow is: **Discrete.** Characteristics: .

Subsurface flow: **Unknown**. Explain findings: Swelling clays hold moisture and prohibit most subsurface flow.
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☒ Bed and banks
☒ OHWM[6] (check all indicators that apply):
☒ clear, natural line impressed on the bank
☐ changes in the character of soil
☐ shelving
☐ vegetation matted down, bent, or absent
☐ leaf litter disturbed or washed away
☐ sediment deposition
☒ water staining
☐ other (list):
☐ the presence of litter and debris
☐ destruction of terrestrial vegetation
☐ the presence of wrack line
☒ sediment sorting
☒ scour
☐ multiple observed or predicted flow events
☒ abrupt change in plant community
☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
[6] A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7] Ibid.

☐ High Tide Line indicated by:
- ☐ oil or scum line along shore objects
- ☐ fine shell or debris deposits (foreshore)
- ☐ physical markings/characteristics
- ☐ tidal gauges
- ☐ other (list):

☐ Mean High Water Mark indicated by:
- ☐ survey to available datum;
- ☐ physical markings;
- ☐ vegetation lines/changes in vegetation types.

**(iii) Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: The review areas occurs within the upper most portion of the Beaver Creek watershed. Coyote Creek is classified by Wyoming Department of Environmental Quality, Water Quality Division (WDEQ/WQD) as a 3B stream, defined as intermittent or ephemeral streams incapable of supporting fish populations or drinking water supplies. Coyote Creek functions as an ephemeral stream channel by collecting surface runoff from upland grassland on shale-based substrates, some reclaimed bentonite mining areas and roadways. The water quality of Coyote Creek is muddy/milky in color, containing some fines from the surrounding clay soils. The upper watershed is sometimes sparsely vegetated due to the shale-based substrates, but the relaimed bentonite mine areas appear to be well vegetated and stable with no evidence of gullies or rills. Few livestock utilize the site. Some public and industrial use (old mining area and railroad transfer station is in the vicinity) may affect the upper watershed to a minor to moderate degree in a few select locations. Coyote Creek may contain some pollutants common to a historically active industrial environment. .

Identify specific pollutants, if known: According to The Surface Water Hydrology report for the site, completed by WWC Engineering (July 2013), the water type for Coyote Creek is sodium sulfate, pH ranged from 6.7-8.4, total disolved solids were 245mg/L and total suspended solids ranged from non-detectable to 470 mg/L; results suggest that suspended solids may settle along the length of the creek. Metal concentrations were generally low; however natural aluminum concentrations were consistently high and copper, lead and zinc levels exceeded WDEQ Aquatic Life Acute standards.

No Total Maximum Daily Load (TMDL) pollutants have been reported to the EPA for this watershed, as of October 1, 1995. A Wyoming Department of Environmental Quality 2012 Integrated 305(b) and 303(d) Report noted no current impairments to Beaver Creek, and no monitoring of water quality concerns from Iron Creek. The South Dakota portion of Beaver Creek near the confluence of the Cheyenne River is listed as impaired due to fecal coliform bacteria, but a South Dakota Department of Environment and Natural Resources 2010 report states that the bacteria load from an Upton waste water treatment facility likely does not reach the impaired segment of Beaver Creek in South Dakota, located more than 50 stream miles away. Fecal coliform bacteria loads likely originate from livestock operations and rural septic systems located directly on Beaver Creek.

**(iv) Biological Characteristics. Channel supports (check all that apply):**

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☒ Wetland fringe. Characteristics: .
- ☒ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☒ Aquatic/wildlife diversity. Explain findings: Northwestern Wyoming is fairly arid. Any source of seasonal water and wetland habitat has the potential to provide habitat for some upland and some seasonal aquatic invertebrates or amphibian wildlife.

**2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

**(i) Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: ca. 7.54 acres

Wetland type. Explain: Herbaceous palustrine emergent.

Wetland quality. Explain: No wetland function assessment completed.

Project wetlands cross or serve as state boundaries. Explain: Project entirely within the state of Wyoming.

(b) General Flow Relationship with Non-TNW:

Flow is: **Ephemeral flow**. Explain: .

Surface flow is: **Discrete**

Characteristics: .

Subsurface flow: **Unknown**. Explain findings: Swelling clays hold moisture and prohibit most subsurface flow.

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☒ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .

4

☐ Ecological connection. Explain:
☐ Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW
Project wetlands are **30 (or more)** river miles from TNW.
Project waters are **30 (or more)** aerial (straight) miles from TNW.
Flow is from: **Wetland to navigable waters.**
Estimate approximate location of wetland as within the **2-year or less** floodplain.

**(ii) Chemical Characteristics:**
Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: Wetlands directly abutting Coyote Creek are alkaline/saline wet meadows and marsh dominated by foxtail barley (Hordeum jubatum), prairie cordgrass (Spartina pectinata), common cattail (Typha latifolia), common spike rush (Eleocharis palustris), and inland saltgrass (Distichlis spicata). These wetlands appear to be the result persistent hydrology held within the channel and drainage area due to the swelling clays. The water quality is likely fair to good, given the high pH and salt crusts that form from evaporation, and other conditions of the natural environment and parent material, as previously described.
Identify specific pollutants, if known: as described for the non-TNW in the previous section.

**(iii) Biological Characteristics. Wetland supports (check all that apply):**
☐ Riparian buffer. Characteristics (type, average width):
☒ Vegetation type/percent cover. Explain: Palustrine emergent wetlands directly abutting Coyote Creek are alkaline/saline wet meadows and marsh dominated by foxtail barley (Hordeum jubatum), prairie cordgrass (Spartina pectinata), common cattail (Typha latifolia), common spike rush (Eleocharis palustris), and inland saltgrass (Distichlis spicata).
☒ Habitat for:
☐ Federally Listed species. Explain findings:
☐ Fish/spawn areas. Explain findings:
☐ Other environmentally-sensitive species. Explain findings:
☒ Aquatic/wildlife diversity. Explain findings: Wetlands and pools abutting the non-RPW potentially provide habitat for aquatic invertebrates with lifecycles adapted to high pH/saline ephemeral pools.

**3. Characteristics of all wetlands adjacent to the tributary (if any)**
All wetland(s) being considered in the cumulative analysis: **1**
Approximately (7.54) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

| Directly abuts? (Y/N) | Size (in acres) | Directly abuts? (Y/N) | Size (in acres) |
|---|---|---|---|
| Y | 7.54 | | |

Summarize overall biological, chemical and physical functions being performed: Nutrient cycling, sediment transport, flood attenuation, wildlife habitat.

## C. SIGNIFICANT NEXUS DETERMINATION

**A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.**

**Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:**

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

**Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:**

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

3. This is a summary of findings of absence of significant nexus between the non-RPW, Coyote Creek, its abutting and adjacent wetlands, and the closest TNW. In assessing the flow characteristics and functions of the non-RPW tributary, the volume, duration and frequency of flow is minor (less than 1 cfs), short (flows less than 60-90 continuous days during an average (typical) year), and infrequent (primarily occuring after snow melt in the spring or after large rainstorms in the summer). Field observations indicate that the pockets of water are retained within the channel, but only episodic sustained flow with a small volume of water and limited contribution of sediment reaches Iron Creek. The seasonal hydrology, pocketed channel, and swelling clays are sufficient to support a narrow riverine wetland along the length of the channel. Collectively, non-RPW and its wetlands drain and intercept/hold pollutants and sediments for a 9 square mile area which represents 0.5% of the Beaver Creek Watershed (1,700 square miles). Collectively, these waters do not drain or hold a significant amount of nutrients, concentrated salts, or pollutants to have more than a speculative or insubstantial effect on the chemical, physical or biological integrity of the Cheyenne River (TNW), located more than 145 river miles (58 aerial miles) down stream from the review area reach in South Dakota. The Cheyenne River was considerered navigable water at the mouth of Rapid Creek which is 225 river miles (90 aerial miles) farther downstream (Newell & Williams, 1976). In addition, there is not sufficient volume, duration, and frequency of flow to transport more than a miniscule amount of natural, industrial or roadside pollutants to Beaver Creek or the Cheyenne River.

4. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

**D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):**

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

   Provide estimates for jurisdictional waters in the review area (check all that apply):
   - ☐ Tributary waters: linear feet width (ft).
   - ☐ Other non-wetland waters: acres.
     Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   - ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   - ☐ Tributary waters: linear feet width (ft).
   - ☐ Other non-wetland waters: acres.
     Identify type(s) of waters: .

[8]See Footnote # 3.

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   - ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
     - ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
     - ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   - ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   - ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.**[9]
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   - ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   - ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   - ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

**E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):**[10]
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

**Identify water body and summarize rationale supporting determination:** .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .
- ☐ Wetlands: acres.

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**
- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.

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[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).

☒ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **The waters evaluated in this AJD form do not meet the Significant Nexus standard, thus, they are not jurisdictional waters (See Section III.C.3). Individually or cumulatively, the non-RPW within this review area, and its adjacent wetlands are not likely to have more than an insubstantial effect on the chemical, physical, and biological integrity of a TNW, the Cheyenne River, located 145 river miles downstream.**

☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

☒ Non-wetland waters (i.e., rivers, streams): **10,666**linear feet, **2-3** width (ft).
☐ Lakes/ponds: acres.
☒ Other non-wetland waters: 0.39acres. List type of aquatic resource: palustrine unconsolidated bottom.
☒ Wetlands: 7.54acres.

## SECTION IV: DATA SOURCES.

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply** - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Aquatic Resources Inventory, Rare Element Resources, Inc., Bear Lodge Project, Upton Plant Site, prepared for Rare Element Resources, April 29, 2013, BKS Environmental Associates, Inc., Gillette, Wyoming.

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

- ☐ Office concurs with data sheets/delineation report.
- ☒ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☒ Corps navigable waters' study: Cheyenne River Navigability Study, Wyoming and South Dakota, April 1976, Prepared by Allen Newell and Gary D. Williams for the U.S. Army Corps of Engineers Omaha District.

☐ U.S. Geological Survey Hydrologic Atlas: .

- ☒ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: 7.5 minute topographic map for the Upton West , WYO Quadrangle.
☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☒ National wetlands inventory map(s). Cite name: Upton West , WYO Quadrangle, 1992.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): False color infrared imagery for theUpton West quadrangle from 2001 & 2009 available on the University of Wyoming Geographic Information Service Center's website http://www.sdvc.uwyo.edu/data.htm .
or ☒ Other (Name & Date): Recent and older satellite imagery of the area available at Google Earth.
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☒ Other information (please specify):

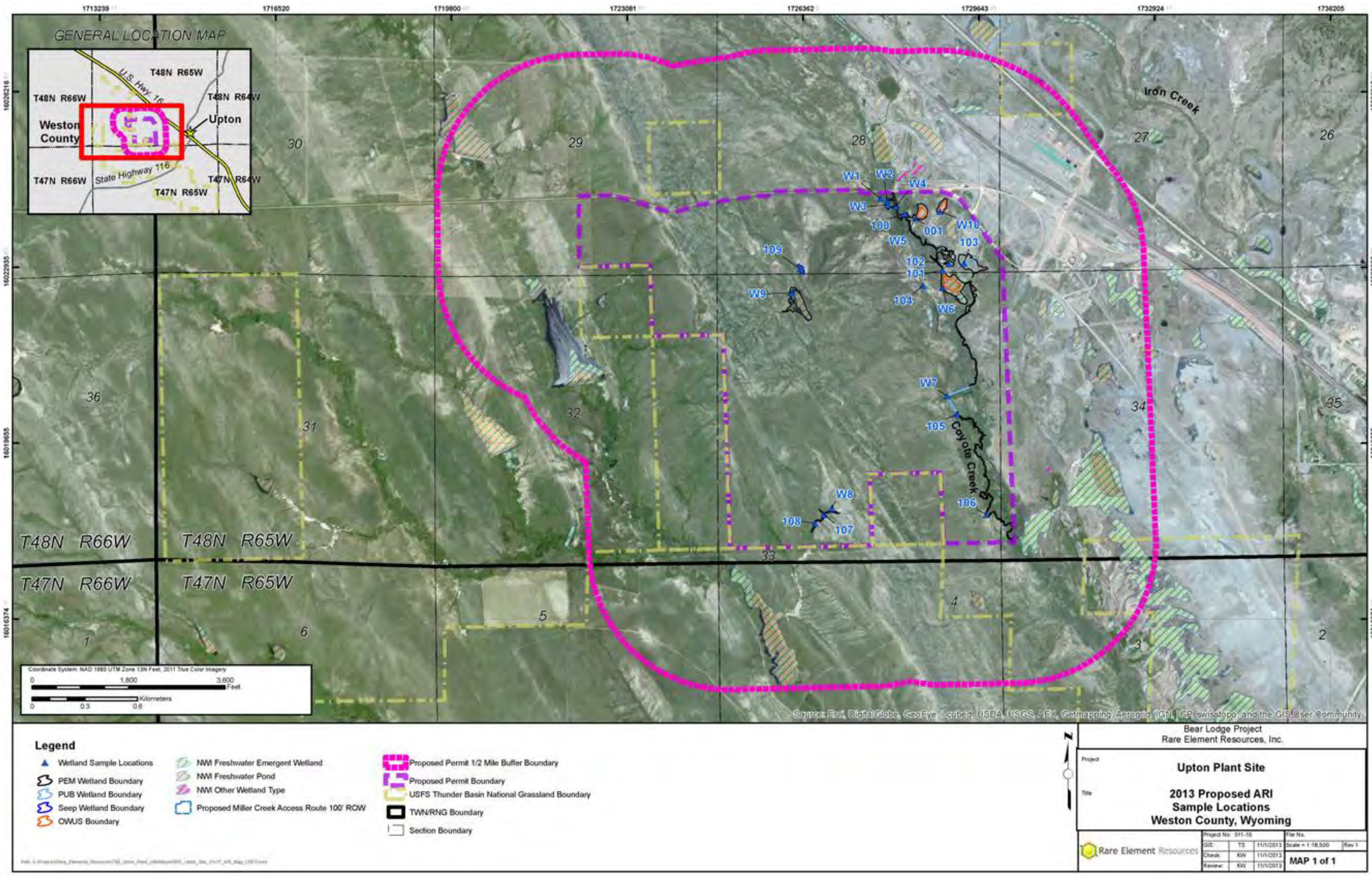
USGS Boundary Descriptions and Names of Regions, Subregions, Accounting Units and Cataloging Units (http://water.usgs.gov/GIS/huc_name.html)

Personal Communication: Kris Thompson, Environmental, Health and Safety Coordinator, Rare Element Resources, August 1, 2013; Mr. and Mrs. Don Bartels, landowner, July 10, 2013, Jessica Baldwin, Environmental Specialist, American Colloid Company, June 24, 2013; Paul Bergstrom, Director of Environmental Health and Safety, Rare Element Resources, June 18, 2013;

Wyoming Water Quality Assessment and Impaired Water List (2012 Integrated 305(b) and 303(d) Report), Doc #12-0203, Wyoming Department of Environmental Quality, Water Quality Division

Fecal Coliform Bacteria Total Maximum Daily Load (TMDL) for Beaver Creek, Fall River County, South Dakota, January 2010, Aaron M. Larson, South Dakota Department of Environment and Natural Resources, Water Resources Assistance Program

Surface Water Hydrology of Upton Plant Site Area prepared for Rare Element Resources, July 2013, WWC Engineering, Sheridan, Wyoming.


GENERAL LOCATION MAP
T48N R65W
T48N R66W
T48N R64W
U.S. Hwy 16
Weston County
Upton
T47N R66W
State Highway 116
T47N R64W
T47N R65W
Iron Creek
Coyote Creek
T48N R66W
T48N R65W
T47N R66W
T47N R65W
Legend
Wetland Sample Locations
PEM Wetland Boundary
PUB Wetland Boundary
Seep Wetland Boundary
OWUS Boundary
NWI Freshwater Emergent Wetland
NWI Freshwater Pond
NWI Other Wetland Type
Proposed Miller Creek Access Route 100' ROW
Proposed Permit 1/2 Mile Buffer Boundary
Proposed Permit Boundary
USFS Thunder Basin National Grassland Boundary
TWN/RNG Boundary
Section Boundary
Bear Lodge Project
Rare Element Resources, Inc.
Upton Plant Site
2013 Proposed ARI
Sample Locations
Weston County, Wyoming
MAP 1 of 1