APPENDIX I.
ALTON COAL TRACT LBA EIS BIOLOGICAL AND WETLAND FIELD INVESTIGATIONS

APPENDIX I CONTENTS

I.1. Alton Coal Tract LBA EIS Report of Reconnaissance Surveys: Vegetation And Special Status Species, Wildlife And Special Status Species, Sandloving Penstemon, Wet Meadows

I.2. Preliminary Jurisdictional Determination for the Alton Coal Tract

I.3. Wetland and Stream Delineation Technical Report - Alton Coal Tract Lease by Application Project

I.4. Alton Coal Tract Special Status Plant Species Clearance Survey Report

I.1. Alton Coal Tract LBA EIS Report of Reconnaissance Surveys: Vegetation And Special Status Species, Wildlife And Special Status Species, Sandloving Penstemon, Wet Meadows

CONTENTS

Preliminary Threatened and Endangered and Sensitive Species Analysis **1**
Reconnaissance Surveys and Potential Species Occurrence Determinations **3**
Reconnaissance Survey November 16–18, 2007 3
Wildlife Survey November 16–18, 2007 3
Methods 3
Results and Discussion 7
Summary of Wildlife Species Eliminated from Detailed Analysis 9
Vegetation Communities/Habitat Classification Survey November 16–18, 2007 10
Methods 10
Results 15
Special Status Plant Species Potential Occurrence Determination 16
Rare Plant Species Survey: *Penstemon ammophilus* May 27–30, 2008 21
Methods 21
Results and Discussion 21
Wet Meadows of the Alton Coal Tract: A Preliminary Assessment July 2, 2008 23
Methods 23
Sampling Design and Transect/Quadrat Placement 23
Cover, Frequency and Composition 23
Results and Discussion 23
Wet Meadows: East Pasture 23
Wet Meadows: West Pasture 25
Discussion 26
Hydrophytic Vegetation 26
Hydric Soils 27
Wetland Hydrology 27
Conclusions 27
Literature Cited **28**

FIGURES

Figure 1. Alton Coal Tract wildlife and vegetation survey map. 5
Figure 2. Alton Coal Tract vegetation (habitat) community map. 13
Figure 3. Alton Coal Tract threatened, endangered, and sensitive plant species habitat. 19
Figure 4. Survey area for sandloving penstemon. 22
Figure 5. Wetland meadow sample areas. 24

TABLES

Table 1. Summary of SWFL, YBCU and MSO Potential to Occur in the LBA 7
Table 2. Other Special Status Wildlife Species with Potential to Occur in the LBA 8
Table 3. Wildlife and Special Status Animal Species Eliminated from Detailed Analysis 9
Table 4. Vegetation Communities and Approximate Acreages with the Alton Coal Tract 15
Table 5. Habitat Requirements of Certain Special Status or Rare Vegetation Species With Possible Occurrence in the LBA 16
Table 6. Acres of Potential Occurrence of Special Status or Rare Plant Species in the LBA (see also Figure 3) 18
Table 7. East Pasture Wet Meadow at the Alton Coal Tract. Total Cover, Standard Deviation and Frequency by Species (2008) 25
Table 8. East Pasture Wet Meadow at the Alton Coal Tract. Total Cover, Standard Deviation and Sample Size (2008) 25
Table 9. West Pasture Wet Meadow at the Alton Coal Tract LBA. Total Cover, Standard Deviation and Frequency by Species (2008) 25
Table 10. West Pasture Wet Meadow at the Alton Coal Tract. Total Cover, Standard Deviation and Sample Size (2008) 26

ATTACHMENTS

Attachment 1: Relevé Plot Data

Attachment 2: Vegetation Associations and Species List

PRELIMINARY THREATENED AND ENDANGERED AND SENSITIVE SPECIES ANALYSIS

On June 7, 2007, personnel from the Bureau of Land Management (BLM) Kanab Field Office met with personnel from SWCA Environmental Consultants (SWCA's) Salt Lake City office about the Alton Coal Tract LBA EIS. At this meeting, the BLM requested that SWCA compile a list of threatened and endangered and sensitive (TES) plant and animal species that may be subject to impacts associated with the potential development of the Alton Coal Tract.

SWCA conducted a three-step process to determine which species may be impacted:

Step 1. Development of a comprehensive species list, including all potentially present species in the affected counties. SWCA personnel compiled a comprehensive list of all potentially impacted TES plant and animal species from the sources listed below. For plants, the comprehensive list was limited to Kane County because ground-disturbing activities would be limited to this county and impacts would be expected to be limited to this area. Impacts to plants would not occur along the proposed transportation corridor. For animals, the comprehensive list comprised Kane, Garfield, and Iron counties. Though new ground disturbance would not be expected in Garfield and Iron counties, the comprehensive list pulls from these counties because impacts may occur from truck collisions with animals.

- **TES Plant Species**
  - Utah Department of Natural Resources, Conservation Data Center (CDC)
  - Inventory of Sensitive Species and Ecosystems in Utah, Endemic and Rare Plants of Utah: An Overview of Their Distribution and Status
  - Kanab Field Office RMP/EIS Final Analysis of the Management Situation (12/2005)
  - Utah Rare Plant Guide (http://www.utahrareplants.org/rpg_species.html; accessed 6/20/2007)
- **TES Animal Species**
  - Utah Department of Natural Resources, CDC
  - Utah State Listed Species by County (compiled using known species occurrences and species observations from the Utah Natural Heritage Program's Biodiversity Tracking and Conservation System [BIOTICS])
  - County Lists of Utah's Federally Listed Threatened (T), Endangered (E), and Candidate (C) Species
  - Kanab Field Office RMP/EIS Final Analysis of the Management Situation (12/2005)

Step 2. Reduction of the comprehensive species list based on the probability of occurrence as determined through the analysis of SWReGAP data, elevation within the potentially affected area, and known distribution according to the CDC database.

- **TES Plant Species**

  SWCA researched each species on the comprehensive list to determine the probability of occurrence in the Alton Coal Tract LBA. Key factors in determining probability of occurrence were vegetation type (SWReGAP), elevation, and known distribution according to the CDC database. Species were sorted into three groups:

  1. Known distribution shown on CDC or SWReGAP; recommend survey/further investigation
  2. Known distribution provided by CDC did not overlap with the tract, but habitat type may occur in the tract; recommend survey/further investigation
  3. Not likely to occur; do not recommend survey

Additional information on each plant's bloom period (where readily available) was also obtained to provide detail relevant to surveying.

- **TES Animal Species**

  SWCA researched each species on the comprehensive list to determine the probability of occurrence in the Alton Coal Tract LBA and along the reasonably foreseeable transportation route and one alternate transportation route. Key factors in determining probability of occurrence were vegetation type (SWReGAP) and known distribution according to the CDC database. Species were sorted into three groups:

  1. Habitat shown on CDC; recommend survey/further investigation
  2. Not shown on CDC but habitat may occur; recommend survey/further investigation
  3. Not likely to occur, do not recommend survey

  Additional information on the survey period for each animal was also obtained.

Step 3. Further reduction of the comprehensive species list based on spatial analysis (GIS) modeling coupled with SWReGAP and CDC analyses.

- **TES Plant Species**

  SWCA used a GIS model to determine specific locations of potential occurrences of TES plant species in the Alton Coal Tract LBA. The GIS model included elevation, vegetation type, and species listed in groups 1 and 2 from Step 2.

- **TES Animal Species**

  SWCA used a GIS model to determine specific locations of potential occurrences of TES animal species in the Alton Coal Tract LBA. The GIS model included habitat type and the listed species in groups 1 and 2 from Step 2.

  SWCA used the same model to determine specific locations of potential occurrences of TES animal species along the reasonably foreseeable transportation route and one alternate route. The GIS model included habitat type and the listed species in groups 1, 2, and 3 from Step 2. The model was limited to a 200-foot buffer zone on either side of the roads making up the reasonably foreseeable transportation route and alternate route. Potential occurrences of TES animals for each transportation segment were provided in a memorandum to the BLM.

At the conclusion of the three-step analysis process, SWCA presented to BLM a list of species for which surveys were recommended, which BLM further refined based on personnel knowledge of the resources in the tract. The final list of recommendations was as follows:

Plants

- Paria breadroot
- Sandloving penstemon
- Ruth's sphaeromeria
- Charleston Mountain violet
- Slender (meager) camissonia
- Jones Cycladenia

Animals

- Bald Eagle
- Yellow-Billed Cuckoo
- Mexican Spotted Owl
- Southwestern Willow Flycatcher
- Three-Toed Woodpecker
- Townsend's Big-Eared Bat
- Western Toad
- Black Swift
- Kit Fox

- Utah Prairie Dog
- Allen's Big-Eared Bat
- Arizona Toad
- Big Free-Tailed Bat
- Burrowing Owl
- Ferruginous Hawk
- Fringed Myotis
- Greater Sage-Grouse
- Lewis's Woodpecker
- Long-Billed Curlew
- Northern Goshawk
- Spotted Bat
- Pygmy Rabbit
- Short-Eared Owl
- **Surveys recommended for proposed and alternate transportation routes:**
  - Pygmy Rabbit
  - Utah Prairie Dog
  - Kit Fox
  - Greater Sage Grouse

This list was then further refined through the reconnaissance surveys discussed below.

RECONNAISSANCE SURVEYS AND POTENTIAL SPECIES OCCURRENCE DETERMINATIONS

During fall 2007 and spring 2008, three reconnaissance-level surveys were conducted on the Alton Coal Tract. These surveys were conducted to

- characterize vegetation communities on the tract,
- determine presence/absence of certain wildlife and plant species on the tract, and
- make a preliminary determination of the presence of wet meadow wetlands on the tract.

Surveys were conducted November 16–18, 2007; May 27–30, 2008; and July 2, 2008. The methods, results, and conclusions of these field inventories are reported below by survey date in ascending chronological order.

RECONNAISSANCE SURVEY NOVEMBER 16–18, 2007

From November 16 to 18, 2007, three personnel from SWCA's Salt Lake City Office and one personnel from Mt. Nebo Consulting (surveyors listed in Attachment 1) conducted a reconnaissance-level survey of lands within the Alton Coal Tract LBA. The purpose of the survey was to 1) provide data for use in alternatives development for the Alton Coal Tact LBA EIS; 2) provide data for Chapters 3 and 4 of the Alton Coal Tract LBA EIS; and 3) narrow the list of species for which species-specific surveys may need to be completed in support of the Alton Coal Tract LBA EIS and provide documentation of this and target areas for species specific surveys during the appropriate survey period.

WILDLIFE SURVEY NOVEMBER 16–18, 2007

METHODS

<u>Mexican Spotted Owl (MSO)</u>

Using the 1997 and 2000 MSO habitat models (Spotskey and Willey 1997, 2000) two areas near the tract were identified as potentially suitable nesting habitat (Figure 1). These areas were assessed by recording the presence-absence of the five primary constituent elements (PCEs) identified in the MSO Recovery Plan (USFWS 1995) and other parameters on a standardized field form, to verify their suitability as MSO nesting habitat.

Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo

Three riparian areas were identified through SWReGAP as potentially suitable habitat for southwestern willow flycatchers (SWFL) and yellow-billed cuckoos (YBCU). These riparian areas were labeled as Riparian A, Riparian B, and Riparian C (see Figure 1). These three stretches were walked and assessed to vserify their suitability as potential stopover and nesting habitat.

The surveyors focused on finding areas containing tamarisk and other species such as Fremont cottonwood *(Populus fremontii)* and black willow *(Salix gooddingii)*, which have the proper structure to be potentially suitable for use by nesting willow flycatchers. For the purposes of the study, potentially suitable habitat was defined as dense, woody, riparian vegetation greater than 3.0 m (9.8 feet) in height with greater than 75% canopy cover.

Pygmy Rabbit

Pygmy rabbits were listed as a potentially occurring species within the tract. Potentially suitable habitat was assessed during other wildlife and general vegetation surveys. According to *Surveying for Pygmy Rabbits* (Ulmschneider et al. 2004):

> The site characteristics of areas inhabited by pygmy rabbits in Utah vary considerably. Burrow habitat in southern, low elevation sites is often limited to the bottom of gentle drainages supporting Wyoming sagebrush amid a black sage, shadscale, and gray molly community of minimal height (28 cm). Understory condition is variable: many sites have grasses and forbs in excellent condition, but some of the most numerous pygmy rabbit populations discovered are in chronically grazed areas (sheep and cattle) being targeted for rehabilitation.

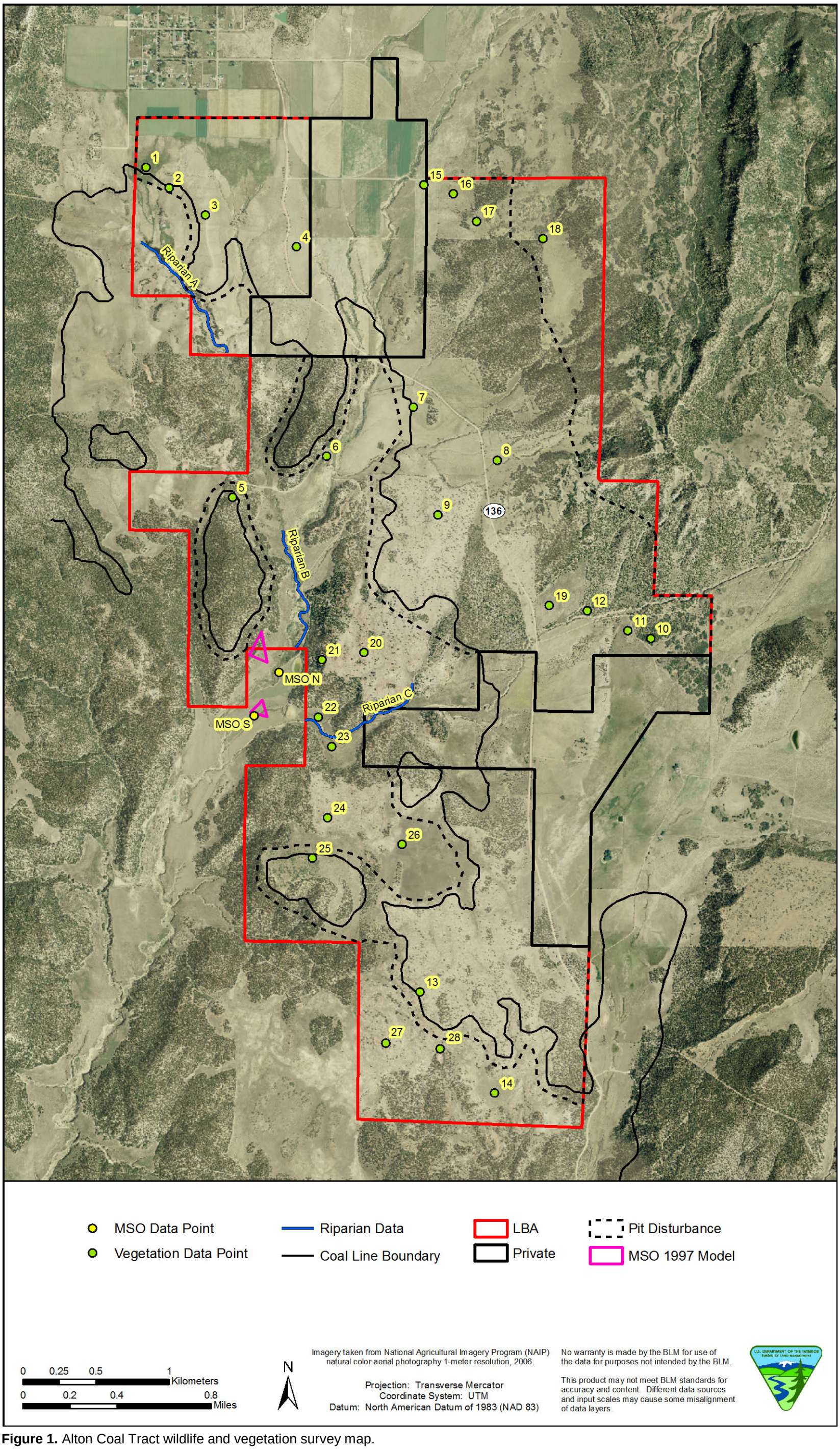


Figure 1. Alton Coal Tract wildlife and vegetation survey map.

This page intentionally blank

Therefore, areas of large dense sagebrush were of particular concern, and the fact that certain areas are grazed did not affect how the area was assessed as to the possibility of the presence of pygmy rabbits.

RESULTS AND DISCUSSION

Mexican Spotted Owl (MSO)

The two potentially suitable MSO habitat units, A-North and A-South (see Figure 1), were evaluated by recording and ranking the presence-absence of the five PCEs identified in the MSO Recovery Plan (USFWS 2004). Both A-North and A-South received poor ratings and therefore are no longer considered potentially suitable habitat for MSO. It is therefore very unlikely that any MSO occur anywhere near the tract.

Southwestern Willow Flycatcher (SWFL) and Western Yellow-billed Cuckoo (YBCU)

The three riparian areas were walked and evaluated (see Figure 1). Riparian Area A did not contain any tamarisk, willow, or cottonwood trees. Riparian Area B had only sparse cottonwood trees along with relatively common Russian olive trees. Riparian Area C had only one cottonwood tree along the entire stretch. Therefore, all three areas Riparian A, B, and C were found to be of no nesting or stopover value to SWFL or YBCU.

Pygmy Rabbit

During the vegetation surveys two different areas were found to be potentially suitable pygmy rabbit habitat (see Figure 1). These areas had relatively large patches of large sagebrush. Potential pygmy rabbit pellets were found and collected. It is possible that these pellets are young or small cottontails.

Table 1. Summary of SWFL, YBCU and MSO Potential to Occur in the LBA

Common Name (*Scientific Name*)	**Status**	**Habitat Type**	**Potential On Tract**	**Field Surveys Recommended?** **EIS Analysis?**
Mexican Spotted Owl (*Strix occidentalis lucida*)	T	This species uses cliff, canyon, riparian, conifer forest, and mixed forest habitats.	No Potential Habitat. Based on fall habitat surveys.	No Field Surveys. No EIS Analysis.
Southwestern Willow Flycatcher (*Empidonax traillii extimus*)	E	This species uses riparian, forested wetland, shrubland, and mixed woodland habitats.	No Potential Habitat. Based on fall habitat surveys.	No additional Field Surveys. No EIS Analysis.
Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)	C	This species uses riparian, forested wetland, scrub-shrub wetland, shrubland, and mixed woodland habitats.	No Potential Habitat. Based on fall habitat surveys.	No additional Field Surveys. No EIS Analysis.
Pygmy Rabbit (*Brachylagus idahoensis*)	SPC	This species uses big sagebrush and shrubland habitats.	Two Potential habitat areas	Additional Field Surveys Recommended. EIS Analysis: Yes.

Other Species

Other special status wildlife species with potential to occur in the tract are listed in Table 2.

Table 2. Other Special Status Wildlife Species with Potential to Occur in the LBA

Common Name (*Scientific Name*)	**Status**	**Habitat Type**	**Potential On Tract**	**Field Surveys Recommended?** **EIS Analysis?**
Bald Eagle (*Haliaeetus leucocephalus*)	Delisted 2008	This species uses riparian, riverine, forested wetland, coniferous forest, mixed forest, and woodland habitats.	Potential wintering habitat is present but no known nests	Raptor surveys completed in 2007 and again before project implementation. EIS Analysis: Yes
Allen's Big-eared Bat (*Idionycteris Phyllotis*)	SPC	This species uses cliff, canyon, and riparian habitats.	Potential habitat surrounding the tract but not within it.	No Field Surveys. EIS Analysis of Indirect Effects.
Arizona Toad (*Bufo microscaphus*)	SPC	This species uses open water, riparian, shrubland, desert, and woodland habitats.	Potential Habitat is present	No Field Surveys. EIS Analysis: Yes
Big Free-tailed Bat (*Nyctinomops macrotis*)	SPC	This species uses cliff, canyon, and riparian habitats.	Potential habitat surrounding the tract but not within it.	No Field Surveys. EIS Analysis of Indirect Effects.
Burrowing Owl (*Athene cunicularia*)	SPC	This species uses grassland, shrubland, and desert habitats.	Likely to occur on the tract	Field surveys should occur where the ground will be disturbed. EIS Analysis: Yes
Ferruginous Hawk (*Buteo regalis*)	SPC	This species uses riparian, cliff, desert, grassland, sagebrush, and shrubland habitats.	Likely to occur on or near the tract. Raptor nest surveys are needed	Raptor surveys completed in 2007 and again before project implementation. EIS Analysis: Yes
Fringed Myotis (*Myotis thysanodes*)	SPC	This species uses cliff, canyon, and riparian habitats.	Potential habitat surrounding the Tract but not within it.	No Field Surveys. EIS Analysis of Indirect Effects.
Greater Sage-grouse (*Centrocercus urophasianus*)	SPC	This species uses grassland, sagebrush, shrubland, and riparian habitats.	Individuals and a lek present on the Tract.	Field Surveys: Yes EIS Analysis: Yes
Lewis's Woodpecker (*Melanerpes lewis*)	SPC	This species uses coniferous forest, woodland, and shrubland habitats.	The CDC shows primary breeding habitat in and adjacent to the tract.	No Field Surveys. EIS Analysis: Yes
Long-billed Curlew (*Numenius americanus*)	SPC	This species uses grassland, wetland, riparian, and shrubland habitats.	Potential habitat	No Field Surveys. EIS Analysis: Yes
Northern Goshawk (*Accipiter gentilis*)	CS	This species uses coniferous forest, mixed forest, woodland, and riparian habitats.	Potential habitat surrounding the Tract but not within it.	No Field Surveys. EIS Analysis: Yes
Spotted Bat (*Euderma maculatum*)	SPC	This species uses cliff, canyon, and riparian habitats.	Potential habitat surrounding the Tract but not within it.	No Field Surveys. EIS Analysis of Indirect Effects.

Table 2. Other Special Status Wildlife Species with Potential to Occur in the LBA

Common Name (*Scientific Name*)	**Status**	**Habitat Type**	**Potential On Tract**	**Field Surveys Recommended?** **EIS Analysis?**
Three-toed Woodpecker (*Picoides tridactylus*)	SPC	This species uses coniferous forest, mixed forest, woodland, shrubland, and riparian habitats.	Potential habitat surrounding the Tract but not within it.	No Field Surveys. EIS Analysis of Indirect Effects.
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	SPC	This species uses cliff, canyon, forested, woodland, and riparian habitats.	Potential habitat surrounding the Tract but not within it.	No Field Surveys. EIS Analysis of Indirect Effects.
Western Toad (*Bufo boreas*)	SPC	This species uses open water, springs, wet meadows, riparian, coniferous forest, and woodland habitats.	Potential habitat	No Field Surveys. EIS Analysis of Indirect Effects.
Black Swift (*Cypseloides niger*)	SPC	This species uses waterfall, cliff, riparian, coniferous forest, mixed forest, and woodland habitats.	No Potential Habitat. Based on fall habitat surveys.	No Field Surveys. No EIS Analysis.
Kit Fox (*Vulpes macrotis)*	SPC	This species uses grassland, desert, shrubland, and savanna habitats.	Potential habitat, but not shown on CDC distribution map	No Field Surveys. EIS Analysis: Yes
Short-eared Owl (*Asio flammeus*)	SPC	This species uses sagebrush, grassland, shrubland, and savanna habitat.	Potential habitat, but not shown on CDC distribution map	No Field Surveys. EIS Analysis: Yes
Utah Prairie Dog (*Cynomys parvidens)*	Fed-T	This species inhabits open, grassy habitats and swales within sagebrush communities (Crocker-Bedford and Spillett 1981). It requires well-drained, deep soils suitable for burrowing, and moist herbage, particularly during drought.	Potential habitat not present on the tract. Populations known to occur along the coal haul transportation route adjacent to SR-20 and have high potential to occur along the coal haul transportation route adjacent to Highways 56 and 89.	Field Surveys: Yes EIS Analysis: Yes

SUMMARY OF WILDLIFE SPECIES ELIMINATED FROM DETAILED ANALYSIS

Based on the data gathered by the original preliminary analysis and supplemented by the results of the reconnaissance surveys, the following wildlife and special status species were eliminated from detailed analysis:

Table 3. Wildlife and Special Status Animal Species Eliminated from Detailed Analysis

Common Name (*Scientific Name*)	**Status**	**Reason Eliminated**
Bonytail (*Gila elegans*)	Fed-E	No potential habitat in tract or coal haul transportation route
Bonneville Cutthroat trout *(Oncorhynchus clarkia Utah)*	CS	No potential habitat in tract or coal haul transportation route

Table 3. Wildlife and Special Status Animal Species Eliminated from Detailed Analysis

Common Name (*Scientific Name*)	Status	Reason Eliminated
Colorado pikeminnow (*Ptychocheilus lucius*)	Fed-E	No potential habitat in tract or coal haul transportation route
Desert Sucker *(Catostomus clarkia)*	SPC	No potential habitat in tract or coal haul transportation route
Humpback chub (*Gila cypha*)	Fed-E	No potential habitat in tract or coal haul transportation route
Razorback sucker (*Xyrauchen texanus*)	Fed-E	No potential habitat in tract or coal haul transportation route
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Fed-E	Not likely to occur in tract or coal haul transportation route
Kanab ambersnail (*Oxyloma kanabense*)	Fed-E	Not likely to occur in tract or coal haul transportation route
Leatherside Chub *(Gila copei)*	SPC	No potential habitat in tract or coal haul transportation route
Mexican spotted owl (*Strix occidentalis*)	Fed-T	Not likely to occur in tract or coal haul transportation route
California Condor (*Gymnogyps californianus*)	Fed-Experimental	Not likely to occur in tract or coal haul transportation route
Coral pink sand dunes tiger beetle (*Cicindela limbata albissima*)	Fed-C	Not likely to occur in tract or coal haul transportation route
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	Fed-C	No potential habitat in tract or coal haul transportation route
Desert bighorn sheep (*Ovis canadensis nelsoni*)	UDWR	Not likely to occur in tract or coal haul transportation route
Dark kangaroo mouse (*Microdipodops megacephalus*)	SPC	Not likely to occur in tract or coal haul transportation route
American white pelican (*Pelecanus erythrorhynchos*)	SPC	No potential habitat in tract or coal haul transportation route
Common chuckwalla (*Sauromalus ater*)	SPC	Not likely to occur in tract or coal haul transportation route
Utah physa (*Physella utahensis*)	SPC	Not likely to occur in tract or coal haul transportation route
Virgin Spinedace *(Lepidomeda mollispinis)*	CS	No potential habitat in tract or coal haul transportation route

VEGETATION COMMUNITIES/HABITAT CLASSIFICATION SURVEY NOVEMBER 16–18, 2007

The tract was surveyed over a three-day period (November 16–18, 2007), with the main areas of focus being those planned for known surface-disturbing activities.

METHODS

SWCA and Mt. Nebo Scientific ecologists surveyed and collected data on dominant species cover in the various vegetation communities within the tract (see Attachment 1, Relevé Plot Data). Vegetation community classification surveys were conducted by recording plant species present and their general percentage cover within an approximate 10 meter radius of the data point. Data points were recorded in areas that typified the overall vegetation community (Figure 2).

The percentage cover for each species was classified as rare (< 5% cover), few (5%–25% cover), moderate (26%–50% cover), or common (> 50% cover). As many data collection points as possible were established in each area of the tract to increase the reliability (for characterization of the affected environment and the analysis of impacts and for photo interpretation) of the data collected. Twenty-six vegetation data points were surveyed during fall 2007 field reconnaissance (see Attachment 1, Relevé Plot Data). Vegetation communities were ground-truthed and delineated on the aerial photograph while recording the data points with a handheld GPS unit as well as driving and walking through the tract.

The information collected was used to delineate the various vegetation communities within the tract. Vegetation data points were plotted on an aerial photo of the area and used to interpret patterns of vegetation cover, which were outlined and digitized onto a map using GIS. The results of the vegetation community delineation are shown in Figure 2.

For consistency, vegetation communities as identified by Mt. Nebo Scientific for other areas in the vicinity of the tract were used with minor modifications. These are sagebrush/grassland, meadows, perennial/annual grasses, pinyon-juniper/sagebrush, mountain brush, rabbitbrush, pinyon-juniper/mountain brush, and pinyon-juniper woodland (see Attachment 2, Vegetation Associations and Species List).

This page intentionally blank

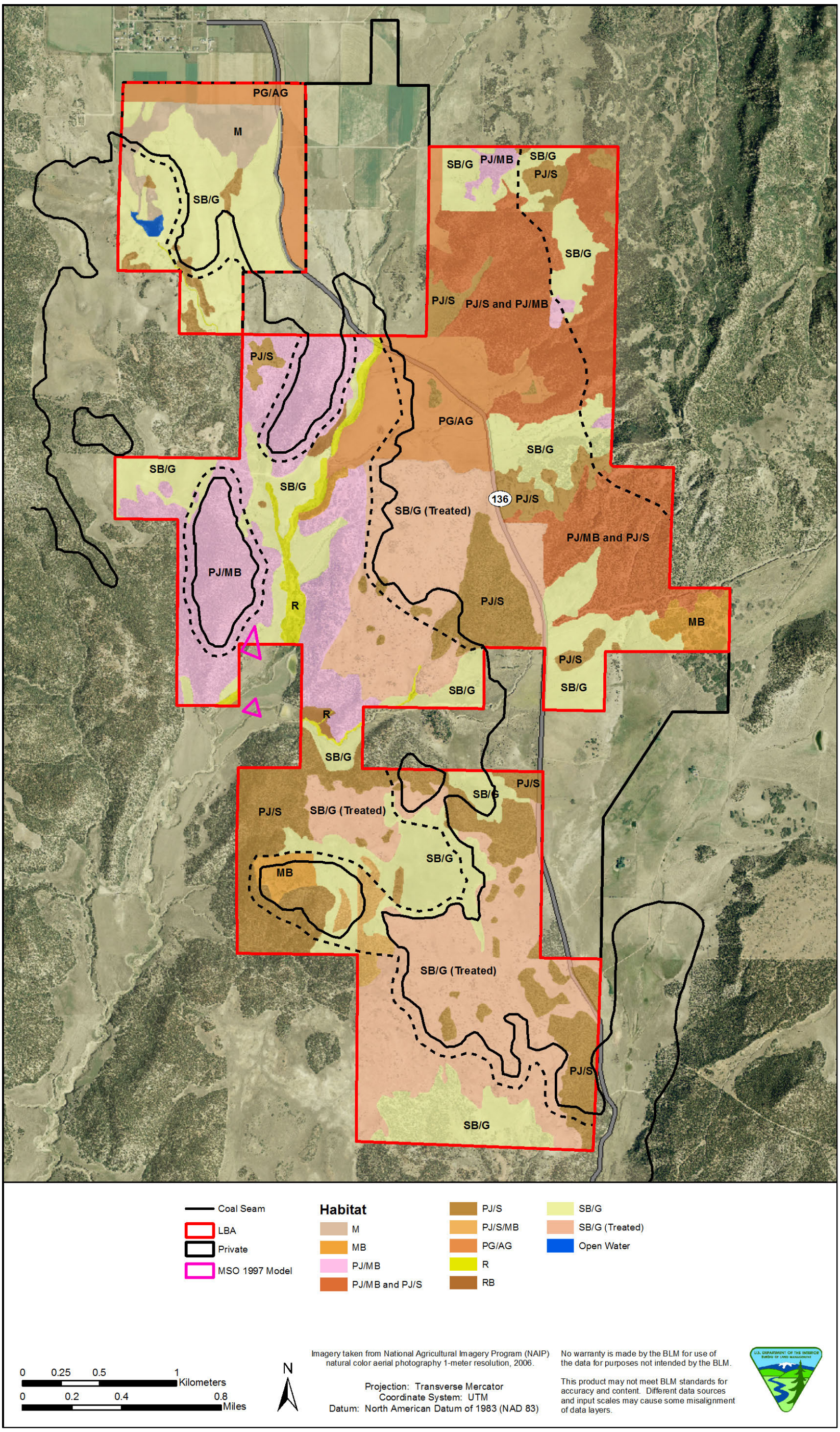


Figure 2. Alton Coal Tract vegetation (habitat) community map.

This page intentionally blank

RESULTS

Reconnaissance survey data coupled with aerial photo interpretation showed approximately 1,440 acres of pinyon-juniper habitat (including pinyon-juniper/sage and pinyon-juniper/mountain brush vegetation types), 275 acres of perennial/annual grasses, 10 acres of rabbitbrush habitat, 915 acres of sagebrush/grassland habitat, 755 acres of sagebrush/grassland (treated) habitat, 65 acres of meadow habitat, and 60 acres of mountain brush habitat. See Figure 2 for vegetation community delineation results. Table 4 lists the acreages of each of these habitats within the tract.

Table 4. Vegetation Communities and Approximate Acreages with the Alton Coal Tract

	Pinyon-juniper*	Sagebrush/ grassland	Sagebrush/ Grassland (Treated)**	Perennial/ Annual Grasses	Meadow	Mountain Brush	Rabbit-brush
Acres	1,440	915	755	275	65	60	10
% of Total (3,581)	40	25.5	21	7.6	1.8	1.7	0.3

* Pinyon-juniper habitat classification includes pinyon-juniper/sagebrush and pinyon-juniper/mountain brush vegetation communities.

** Sagebrush/Grassland (treated) habitat classification includes areas if sagebrush and grassland vegetation communities where pinyon and juniper trees have been cut or chained and the body of the tree chipped.

SPECIAL STATUS PLANT SPECIES POTENTIAL OCCURRENCE DETERMINATION

Potential for special status plant species identified during the preliminary threatened and endangered and sensitive species analysis was determined using the vegetation communities as delineated during the fall 2007 field reconnaissance visit. Using the known habitat preferences of these species, SWCA was able to determine areas of possible occurrence for these species within the tract.

Based on the *County Lists of Utah's Threatened, Endangered, and Candidate Species* (UDWR 2007), sensitive species lists as published in the BLM Kanab Field Office Draft Resource Management Plan (BLM 2007), the *Utah Rare Plant Guide* (UNPS 2007), and GIS analysis using SWReGAP vegetation data and elevation, the following special status or rare plant species may occur in the Alton Coal Tract LBA: Paria breadroot (*Pediomelum pariense*), sandloving penstemon (*Penstemon ammophilus*), Ruth's sphaeromeria (*Sphaeromeria ruthiae*), Charleston Mountain violet (*Viola charlestonensis*), slender camissonia (*Camissonia exilis*), and Jones cycladenia (*Cycladenia humilis* var. *jonesii*). The habitat requirements for each of these species are outlined in Table 5 (UNPS 2007).

Table 5. Habitat Requirements of Certain Special Status or Rare Vegetation Species With Possible Occurrence in the LBA

Species	Elevation Range	Flowering Season	Vegetation Associations	Soils and Geology Associations	Status	Additional surveys recommended?
Paria breadroot (*Pediomelum pariense*)	5,600 to 8,000 feet	June through July	Ponderosa pine and pinyon-juniper	Calcareous or sandy soils on Wasatch limestone	Utah Rare Plant (UNPS 2007)	No
Sandloving penstemon (*Penstemon ammophilus*)	5,900 to 7,200 feet	Late May through June	Ponderosa pine or mixed shrub communities	Blow sand derived from Navajo sandstone	BLM Sensitive Species	Yes
Ruth's sphaeromeria (*Sphaeromeria ruthiae*)	4,400 to 6,600 feet	September	Ponderosa pine, Douglas fir, oak, mountain mahogany, bigtooth maple, box elder, and sandstone crevice communities	Navajo and Kayenta sandstone, on cliffs and boulders	Utah Rare Plant (UNPS 2007)	No
Charleston Mountain violet (*Viola charlestonensis*)	6,500 to 9,500 feet	May through June	Ponderosa pine communities, limestone hills, slopes, and dry washes	Claron and Carmel Limestone	Utah Rare Plant (UNPS 2007)	No
Slender camissonia (*Camissonia exilis*)	5,000 to 6,900 feet	Late April to May	Sagebrush, galleta, and pinyon-juniper communities	Gypsiferous strata of Moenkopi, Entrada, Carmel, and other fine-textured substrates (Welsh et al. 2003)	BLM Sensitive Species	No

Table 5. Habitat Requirements of Certain Special Status or Rare Vegetation Species With Possible Occurrence in the LBA

Species	Elevation Range	Flowering Season	Vegetation Associations	Soils and Geology Associations	Status	Additional surveys recommended?
Jones cycladenia (*Cycladenia humilis* var. *jonesii*)	4,400 to 6,000 feet	Mid-May to June	Eriogonum-Ephedra cool desert shrub and juniper communities	Gypsiferous saline soils on Chinle, Cutler, and Summerville formations	Federally listed as threatened	No

To precisely determine areas of suitable habitat for these species within the Alton Coal Tract, data on surface geology (UGS 1999) and elevation were used in combination with vegetation community data as delineated through survey work. The main types of surface geology in the area are Tropic Shale (Kt) and Dakota formation (Kd), both of which are a mix of shale and sandstone. Other types of surface geology in the tract are Alluvium (Qa) and Mass Movement Deposits (Qms). Alluvium areas are mostly sand and other loose materials deposited in stream beds and washes, and Mass Movement Deposits include rock fall, talus, and colluvium (UGS 1999). Since there are no areas of limestone in the tract, Charleston Mountain violet and Paria breadroot are not likely to occur in the tract. There are also no Chinle, Cutler, or Summerville formations, which excludes Jones' Cycladenia. Finally, the lack of Navajo and Kayenta sandstone, and Moenkopi, Entrada, and Carmel formations excludes Ruth's sphaeromeria and slender camissonia from occurring in the tract. No surveys are recommended for these five species in the 2008 field season.

Possible areas of occurrence for the remaining species, sandloving penstemon, are shown in Figure 3. These potential habitat areas were identified by referencing surface geology information (UGS 1999) and vegetation covers as delineated using data acquired during the fall 2007 field surveys. Based on habitat requirements listed by the Utah Rare Plant Guide (UNPS 2007), sandloving penstemon has a relatively high likelihood of occurrence in Qa surface geology coupled with mountain brush, sagebrush/grass, or rabbitbrush ecology. Sandloving penstemon may also occur, although with lower likelihood, in Qa or Qms surface geology coupled with sagebrush/grassland (treated) or pinyon-juniper/mountain brush communities. Estimated areas of potential habitat for this species are shown in Table 6 and Figure 3.

Table 6. Acres of Potential Occurrence of Special Status or Rare Plant Species in the LBA (see also Figure 3)

	Acres of Higher Likelihood Potential Occurrence	**Acres of Lower Likelihood Potential Occurrence**
Sandloving penstemon	625.09	443.26

Surveys for sandloving penstemon are recommended in identified potential habitat during their flowering period (May and June) in the 2008 field season. Recommended areas of focus include locations where potential habitats overlap with proposed impact areas, although surrounding areas may also be surveyed as necessary.

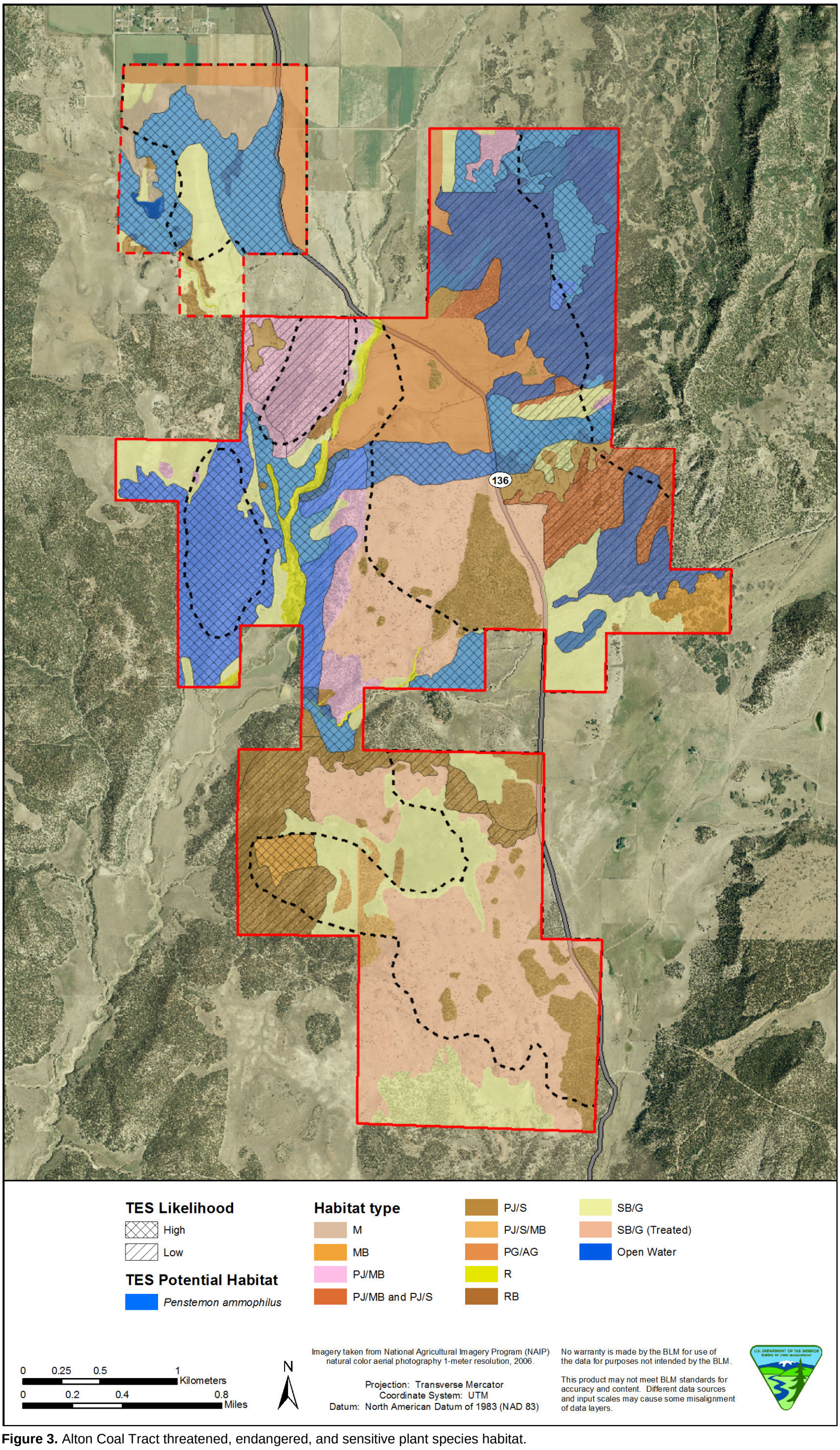


Figure 3. Alton Coal Tract threatened, endangered, and sensitive plant species habitat.

This page intentionally blank

RARE PLANT SPECIES SURVEY: *PENSTEMON AMMOPHILUS* MAY 27–30, 2008

Based on the recommendation from the habitat classification surveys and special status plant species potential occurrence determinations, a field survey was conducted to further assess the potential for sandloving penstemon to be present in the Alton Coal Tract.

METHODS

Prior to the field survey, known locations of sandloving penstemon were reviewed at the herbarium at Brigham Young University, Provo, Utah. All specimen locations were plotted on a field map. Notes about habitats, associated plant communities, elevation, phenology, geology, soil types, and other applicable information were written in a field notebook. Based on the voucher specimens for this plant species, the most appropriate days believed to successfully locate sandloving penstemon in a field survey were chosen for the survey period.

Prior to surveying the Alton Coal Tract, several known locations of the plant were visited to review the specific habitats, identify the current phenology of the species and also to re-create a visual or "target" image for the surveyor. Once these locations, habitats, and live plants were visited, the survey then focused on the areas within the Alton Coal Tract.

The field survey for sandloving penstemon was conducted from May 27 to May 30, 2008 by Mt. Nebo Scientific, Inc. Figure 4 identifies the survey area for the sandloving penstemon. These areas were accessed using a 4WD vehicle and an ATV on the roads and trails, then by walking the areas not accessible by the vehicles. Binoculars and spotting scopes were also used to assist in the search for suitable habitat for the plants.

RESULTS AND DISCUSSION

Although relatively close in proximity to known populations of the sandloving penstemon, this plant species was not found in the tract shown in Figure 4, nor was the precise habitat of which this plant is currently thought to be limited to, found in the tract. Based on the research and subsequent field survey for the sandloving penstemon, it is believed that there is a very low probability that the species occurs in the tract.

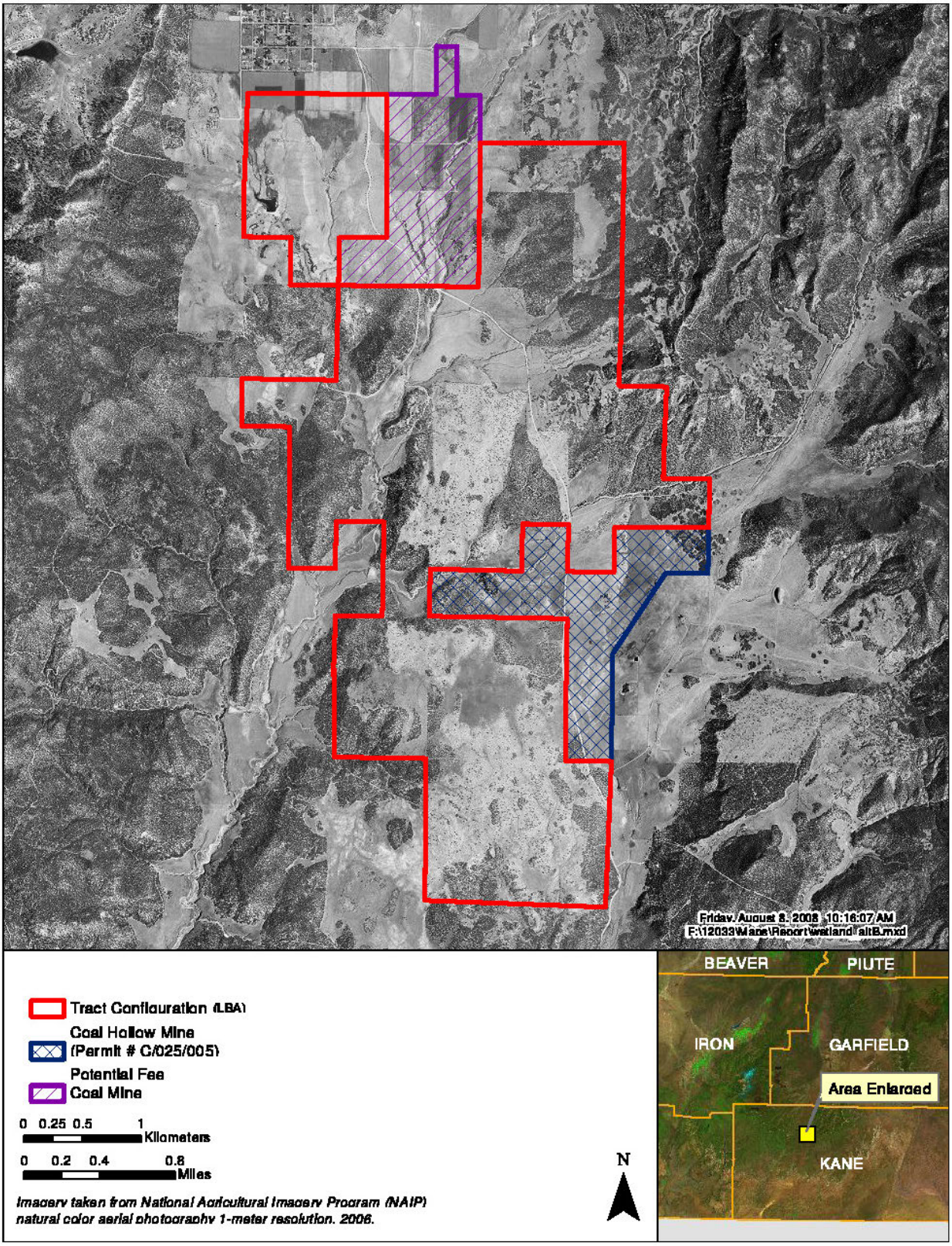


Figure 4. Survey area for sandloving penstemon.

WET MEADOWS OF THE ALTON COAL TRACT: A PRELIMINARY ASSESSMENT JULY 2, 2008

The scope of this study was to provide a preliminary assessment of some specific wet meadows currently used as pasture lands near the northern most boundary of the tract. The scope of the study was to provide a preliminary description of the pastures/meadows from a vegetation aspect with implications regarding their potential for being considered for future wetland studies. Soils and hydrology, two additional components required for wetland determinations, are only cursorily addressed in this study.

The study area was visited in November 2007, June 2008, and July 2008. On July 2, 2008, quantitative and qualitative data were recorded in the wet meadows near the northern boundary of the tract, just south of the Town of Alton, Utah (Figure 5).

METHODS

SAMPLING DESIGN AND TRANSECT/QUADRAT PLACEMENT

Transect lines for vegetation sampling were placed randomly within the boundaries of the meadow areas (see Figure 5). The transect placement technique was employed with the goal to adequately sample the meadows with a representative number of samples for each area. Once transects were established, quadrat locations for sampling were chosen using random numbers from the transect lines with the objective to record data without preconceived bias.

COVER, FREQUENCY AND COMPOSITION

Cover estimates were made using ocular methods with meter square quadrats. Species composition, cover by species, and relative frequencies were also assessed from the quadrats. Additional information was recorded on the raw data sheets notes such as: slope, exposure, grazing use, disturbance and/or other appropriate notes. Plant nomenclature follows Welsh et al. (2003).

RESULTS AND DISCUSSION

The sample areas were comprised of two wet meadows. They were sampled and have been reported separately and were called the “East Pasture" and "West Pasture" (see Figure 5).

WET MEADOWS: EAST PASTURE

The dominant plant species present in the sample quadrats in the East Pasture were wiregrass (*Juncus arcticus*), small-wing sedge (*Carex microptera*), and Missouri iris (*Iris missouriensis*). All species present in the sample quadrats along with their cover and frequency values are shown in Table 7. The total living cover for the East Pasture was estimated at 80.75% (Table 8). The living understory cover composition was comprised of 85.48% grasses (or grass-like species) and 14.52% forbs (see Table 8). No woody species were present in the sample quadrats.

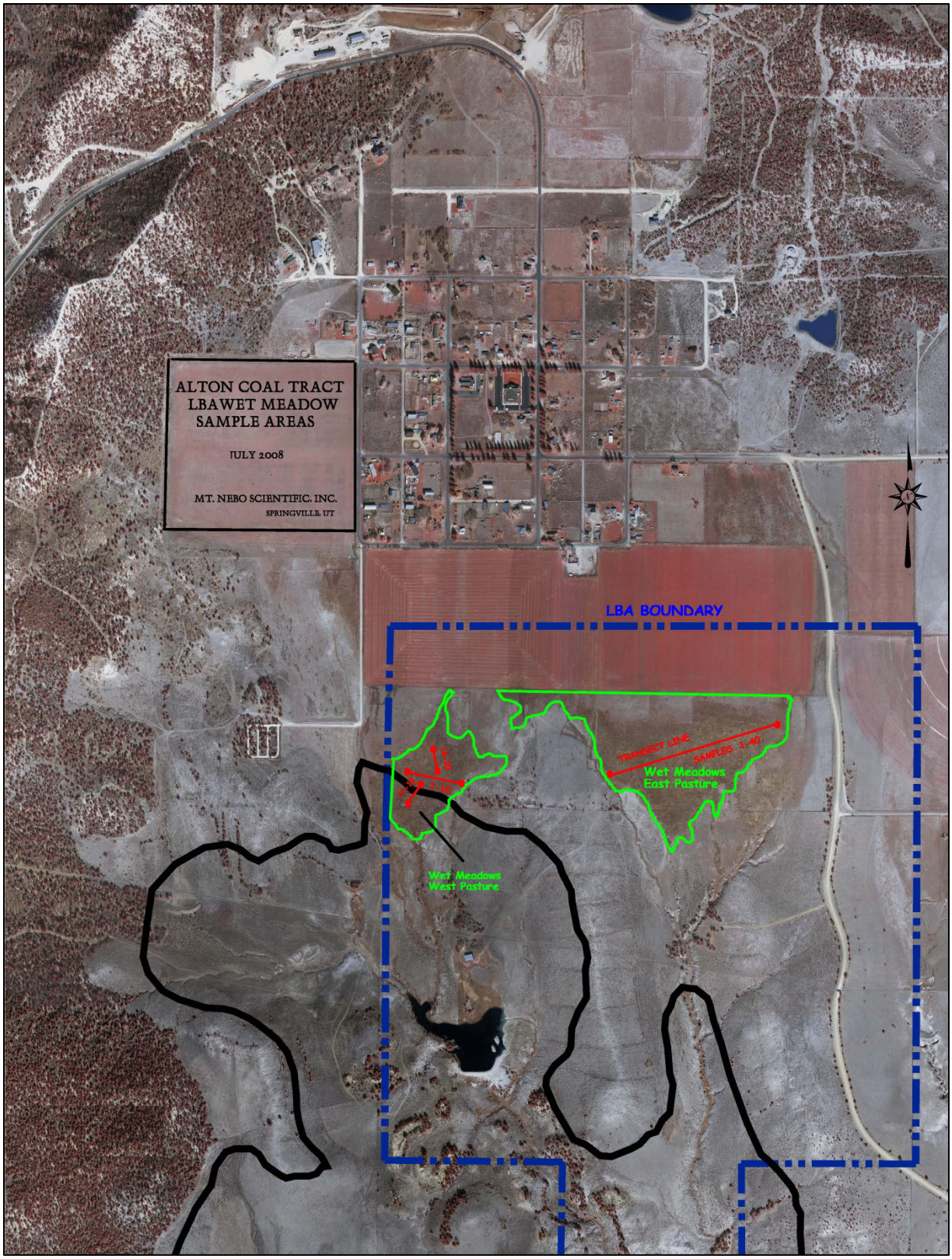


Figure 5. Wetland meadow sample areas.

Table 7. East Pasture Wet Meadow at the Alton Coal Tract. Total Cover, Standard Deviation and Frequency by Species (2008)

	Mean Percentage	Standard Deviation	Percentage Frequency
Trees and Shrubs			
Forbs			
Chenopodium sp.	0.13	0.78	2.50
Erigeron sp.	3.38	8.47	20.00
Iris missouriensis	7.13	11.88	32.50
Melilotus officinalis	0.25	1.56	2.50
Plantago major	0.25	1.09	5.00
Grasses			
Bromus inermis	3.13	6.39	22.50
Carex microptera	18.50	19.50	60.00
Juncus arcticus	47.50	26.76	90.00

Table 8. East Pasture Wet Meadow at the Alton Coal Tract. Total Cover, Standard Deviation and Sample Size (2008)

	Mean Percentage	Standard Deviation	Percentage Frequency
A. Total Cover			
Total Living Cover	80.75	10.34	40
Litter	16.20	9.33	40
Bareground	2.03	2.40	40
Rock	1.03	0.16	40
B. % Composition			
Shrubs	0.00	0.00	40
Forbs	14.52	18.08	40
Grasses	85.48	18.08	40

WET MEADOWS: WEST PASTURE

The dominant plant species for the West Pasture was primarily wiregrass (Table 9). Total living cover in this meadow was 78.00% (Table 10). The living cover was comprised almost exclusively of grass or grass-like species, which made up nearly 97% of the living cover by composition (see Table 10). Like the East Pasture, no woody species were present in the sample quadrats.

Table 9. West Pasture Wet Meadow at the Alton Coal Tract LBA. Total Cover, Standard Deviation and Frequency by Species (2008)

	Mean Percentage	Standard Deviation	Percentage Frequency
Trees and Shrubs			
Forbs			
Cirsium sp.	0.75	1.79	15.00
Erigeron sp.	0.85	1.80	20.00

Table 9. West Pasture Wet Meadow at the Alton Coal Tract LBA. Total Cover, Standard Deviation and Frequency by Species (2008)

	Mean Percentage	Standard Deviation	Percentage Frequency
Melilotus officinalis	0.75	2.38	10.00
Grasses			
Bromus inermis	6.40	9.53	50.00
Elymus elymoides	0.25	1.09	5.00
Juncus arcticus	67.50	14.45	100.00
Poa pratensis	1.50	4.77	10.00

Table 10. West Pasture Wet Meadow at the Alton Coal Tract. Total Cover, Standard Deviation and Sample Size (2008)

	Mean Percentage	Standard Deviation	Percentage Frequency
A. Total Cover			
Total Living Cover	78.00	7.65	20
Litter	15.85	9.60	20
Bareground	5.10	6.63	20
Rock	1.05	0.22	20
B. % Composition			
Shrubs	0.00	0.00	20
Forbs	3.01	4.83	20
Grasses	96.99	4.83	20

DISCUSSION

HYDROPHYTIC VEGETATION

As mentioned, the scope of this report was to provide vegetation information regarding the wet meadows near the northern boundary of the Alton Coal Tract. Quantitative data from sampling the plant communities of the wet meadows can provide insight as to whether these areas may have the potential to be delineated as jurisdictional wetlands and if additional studies should be conducted in the future to make this determination. The U.S. Army Corps of Engineers (COE), the regulatory agency responsible for jurisdiction of wetlands under Section 404 of the Clean Water Act (33 USC 1344), has recently provided a manual that provides technical guidance and procedures for identifying and delineating wetlands in the arid west region, of which the Alton Coal Tract is part (COE 2006).

The COE manual mentioned above has a section regarding hydrophytic vegetation indicators for wetland delineations. This section describes two procedures that may be used to indicate the presence of hydrophytic vegetation, which is one step in determining if a given area would be considered wetland or jurisdictional wetland by definition. Both hydrophytic vegetation indicator procedures use quantitative data for their determinations. The first test is called the Dominance Test.

The Dominance Test is the basic hydrophytic vegetation indicator and “should be applied in every wetland determination in the arid west”. This test is described by suggesting that the vegetation in a given

community is "hydrophytic" if more that 50% of the dominant plant species across all strata are rated as follows:

1. OBL [Obligate Wetland: occurs almost always (estimated probability 99%) under natural condition in wetlands]
2. FACW [Facultative Wetland: usually occurs in wetlands (estimated probability 67%– 99%), but occasionally found in non-wetlands]
3. FAC [Facultative Wetland: Equally likely to occur in wetland or non-wetland (estimated probability 34%–66%)]

When the data from the East Pasture and West Pasture wet meadows were put through the Dominance Test, **both pastures would be considered to support hydrophytic vegetation** by the COE methods.

The second COE hydrophytic vegetation indicator procedure is called the Prevalence Test. This test can be employed on the vegetation in a community if it fails the Dominance Test described above, but meets those requirements for hydric soils and wetland hydrology in the wetland delineation process. The Prevalence Test considers all species in a plant community; however, the indicator categories assigned to the species (OBL, FACW, FAC, etc.) places a "weighted" value on them by using cover values of individual species. In other words, if a given plant species has more cover and is assigned OBL, FACW or FAC it is more likely that the community will be determined to be hydrophytic.

When the quantitative data of the East Pasture and West Pasture wet meadows are computed through the Prevalence Test, **both pastures would be considered as supporting hydrophytic vegetation**.

HYDRIC SOILS

As mentioned previously, the focus of this study was to be on vegetation analyses and *not* on soils or hydrology, two other important aspects for studies when delineating wetlands using COE protocols. Nonetheless, a few holes were dug in the pastures and the soils were examined for redox characteristics. These soil characteristics were present in the limited amount of sample holes observed. These holes were dug at random locations, but the sample number was not enough to be considered an adequate number of samples to determine if the meadows were dominated by hydric soils to be determined as jurisdictional by the COE.

WETLAND HYDROLOGY

This discipline is another crucial consideration necessary for wetland determinations and has not been studied in enough detail to make the determination in the scope of this report. However, when aerial photographs were examined (i.e., Figure 5) and when field observations were considered, it appears that the water supporting wet meadows in the East Pasture and West Pasture is a result of runoff irrigation from the fields directly north and adjacent to the pastures—not the result of water being supplied by natural means such as springs or seeps in the immediate area.

CONCLUSIONS

The quantitative data and the test procedures that determine the presence of hydrophytic vegetation suggests that the wet meadows of the East Pasture and West Pasture are that of wetlands—whether or not they are jurisdictional through the COE has not yet been determined. Cursory thoughts about soils and hydrology also suggest these areas could be considered wetlands. However, because the hydrologic regime may be artificially induced by present and historical irrigation practices, more study is probably warranted if a determination is to be made if the areas would be considered jurisdictional through the COE.

LITERATURE CITED

BLM. 2007. *Kanab Field Office Draft Resource Management Plan and Environmental Impact Statement*. Washington, D.C.: U.S. Department of the Interior, Bureau of Land Management, Kanab, Utah, Field Office.

Crocker-Bedford, D. C., and J. J. Spillett. 1981. *Habitat relationships of the Utah prairie dog.* Publication No. 1981-0-677-202/4. U.S. Department of Agriculture, Forest Service, Intermountain Region, Ogden, Utah.

UDWR. 2007. County Lists of Utah's Threatened, Endangered, and Candidate Species. Salt Lake City, Utah. Available at: http://dwrcdc.nr.utah.gov/ucdc/ViewReports/te_cnty.pdf. Accessed November 2007.

UNPS. 2003–2007. *Utah Rare Plant Guide*. Salt Lake City, UT: Utah Rare Plant Guide Home Page. Available at: http://www.utahrareplants.org. Accessed November 2007.

UGS. 1999. Interim Geologic Map of the Kanab 30' by 60' Quadrangle, Kane and Washington Counties, Utah, and Coconino and Mohave Counties, Arizona. Open-File Report 366. Salt Lake City, Utah.

Welsh, S. L., D. Atwood, S. Goodrich, and L.C. Higgins. 2003. *A Utah Flora.* Provo, Utah: Brigham Young University Print Services.

Willey, D. W., and D. Spotskey. 1997. *GIS habitat model for Mexican spotted owl habitat in Utah. Utah Division of Wildlife Resources.* Unpublished Final Report. Salt Lake City, Utah.

———. 2000. *Field test of a habitat model for Mexican spotted owl breeding habitat*. Final Report; Arizona Heritage Program, Phoenix, Arizona.

Ulmschneider, H., D. Hays, H. Roberts, J. Rachlow, T. Forbes, J. Himes, E. Sequin, M. Haworth, T. Katzner, A. Lozlowski, R. Rauschder, and P. Lauridson, 2004. *Surveying for pygmy rabbits (*Brachylagus idahoensis*).*

U.S. Fish and Wildlife Service. 1995. *Recovery Plan for the Mexican Spotted Owl (*Strix occidentalis lucida).

U.S. Army Corps of Engineers. 2006. *Interim regional supplement to the Corps of Engineers wetland delineation manual: arid west region*. ERDC/EL TR-06-16, December 2006. U.S. Army Engineer Research and Development Center, Vicksburg, MS.

Attachment 1: Relevé Plot Data

SWCA Surveyors:

Ben Gaddis, M.E.M.

Thomas Sharp, M.S.

Audrey McCulley, B.S.

Mt. Nebo Consulting Surveyors:

Patrick D Collins, Ph. D.

This page intentionally blank

Relevé Plot Data Date	Relevé ID	Plant Community	Surveyors	General Notes
11/17/2007	Veg 1	Wiregrass	PDC and AAM	Pasture, grazed, irrigation runoff area
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM	Could have been seeded because lots of AGCR, may not be as "natural" as other ARNO communities. Small scattered JUOS.
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM	Close to native condition as compared to veg 2.
11/17/2007	Veg 4	Pastureland	PDC and AAM	Previously was a sagebrush/grass community. Presently pasture, unirrigated and fenced.
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS	
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM	Heavily grazed, previously s/g community
11/17/2007	Veg 7	Dry pastureland	PDC and AAM	Converted from s/g, scattered PJ, very heavily grazed. Fairly recently worked by tractor.
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM	PJ cleared but not ARNO. Other side of road was cleared of ARNO.
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM	Chipped PJ. To ehn.(?) sage grouse habitat.
11/17/2007	Veg 10	Oakbrush	PDC and AAM	Area adjacent to PJ removed with track hoe and grapple claw to increase sage grouse habitat. Piles of PJ.
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM	
11/18/2007	Veg 12	PJ	PDC and AAM	Lots of bare ground
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM	Lots of bare ground covered with chipped PJ, weeds, and a fair amount oak, used to be mostly PJ with sage but much of the PJ has been cleared.
11/17/2007	Veg A (15)	Pastureland	TS and BTG	Grazed grasses also part of cover. Grazed.
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG	Grazed grasses have moderate cover.
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG	Grazed grasses have abundant cover. PJ near edge of plot.
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG	Grasses have abundant cover. Less grazed than A, B, C.
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG	PJ in surrounding area.
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG	Previously this area was mostly PJ. Currently it is progressing toward a S/G community. Chipped to increase sage grouse habitat.
11/18/2007	Veg G (21)	P-J	PDC and BTG	Some soil pavement present (0.5"). Sparse understory. No forbs or grasses noted here.
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG	
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG	ARNO and CHNA areas interspersed. Few forb species.
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG	
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG	Relatively small area with lots of ARNO.
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG	Very homogenous.

Relevé Plot Data	**Relevé ID**	**Plant Community**	**Surveyors**	***Achillea millefolium***	***Agropyrum cristatum***	***Artemisia nova***	***Artemisia tridentata***
Date				**ACMI**	**AGCR**	**ARNO**	**ARTR**
11/17/2007	Veg 1	Wiregrass	PDC and AAM				
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM			common	
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM			common	
11/17/2007	Veg 4	Pastureland	PDC and AAM		common	few	
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS			moderate	
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM			rare	few
11/17/2007	Veg 7	Dry pastureland	PDC and AAM		moderate	few	
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM		moderate	common	moderate
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM		moderate	common	
11/17/2007	Veg 10	Oakbrush	PDC and AAM				moderate
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM				
11/18/2007	Veg 12	PJ	PDC and AAM			moderate	
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM			moderate	
11/17/2007	Veg A (15)	Pastureland	TS and BTG			few	
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG			few	
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG			moderate	
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG			common	
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG			common	
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG		few	moderate	moderate
11/18/2007	Veg G (21)	P-J	PDC and BTG			moderate	few
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG				moderate
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG			common	
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG	moderate		few	few
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG		common	common	
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG			common	few

Relevé Plot Data	**Relevé ID**	**Plant Community**	**Surveyors**	***Artemisia tridentata* var. *vaseyana***	**Aster or composite sp.**	***Astragalus* sp.**	***Atriplex canescens***
Date				**ATRVA**	**ASTER**	**ASTRAGALUS**	**ATCA**
11/17/2007	Veg 1	Wiregrass	PDC and AAM				
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM				
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM				
11/17/2007	Veg 4	Pastureland	PDC and AAM				
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS				
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM				rare
11/17/2007	Veg 7	Dry pastureland	PDC and AAM				
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM				
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM				
11/17/2007	Veg 10	Oakbrush	PDC and AAM				
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM				
11/18/2007	Veg 12	PJ	PDC and AAM				
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM		few	few	
11/17/2007	Veg A (15)	Pastureland	TS and BTG				
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG				
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG				
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG				
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG				
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG				
11/18/2007	Veg G (21)	P-J	PDC and BTG				
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG				
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG				
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG				
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG	moderate			
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG				

Relevé Plot Data	**Relevé ID**	**Plant Community**	**Surveyors**	***Bromus carinatus***	***Bromus inermis***	***Bromus tectorum***	***Carex* sp.**	***Cercocarpus montanus***
Date				**BRCA**	**BRIN**	**BRTE**	**CAREX**	**CEMO**
11/17/2007	Veg 1	Wiregrass	PDC and AAM					
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM					
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM	common				
11/17/2007	Veg 4	Pastureland	PDC and AAM		few			
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS					common
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM				few	
11/17/2007	Veg 7	Dry pastureland	PDC and AAM	few				
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM	moderate				few
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM					
11/17/2007	Veg 10	Oakbrush	PDC and AAM					
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM			common		
11/18/2007	Veg 12	PJ	PDC and AAM					
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM			few		
11/17/2007	Veg A (15)	Pastureland	TS and BTG					
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG					
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG					
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG					
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG					
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG	few		few		
11/18/2007	Veg G (21)	P-J	PDC and BTG					
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG					
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG					
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG					
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG		moderate			few
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG			few		

Relevé Plot Data	**Relevé ID**	**Plant Community**	**Surveyors**	***Cirsium* sp.**	***Cirsium arvense***	***Chrysothamnus nauseosus***	***Dactylis glomerata***	***Echinocereus* sp.**
Date				**CIRSIUM**	**CIAR**	**CHNA**	**DAGL**	**ECHINOCACTUS**
11/17/2007	Veg 1	Wiregrass	PDC and AAM		rare			
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM					
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM			few		
11/17/2007	Veg 4	Pastureland	PDC and AAM	few			few	
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS					rare
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM			common		
11/17/2007	Veg 7	Dry pastureland	PDC and AAM	few		few		
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM					
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM					
11/17/2007	Veg 10	Oakbrush	PDC and AAM					
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM	rare		few		
11/18/2007	Veg 12	PJ	PDC and AAM					
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM	moderate				
11/17/2007	Veg A (15)	Pastureland	TS and BTG			moderate		
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG			few		
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG			few		
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG					
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG					
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG	few		few		
11/18/2007	Veg G (21)	P-J	PDC and BTG					
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG			common		
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG			common		
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG	moderate				
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG			moderate		
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG					

Relevé Plot Data	**Relevé ID**	**Plant Community**	**Surveyors**	***Elymus hispidus***	***Elymus smithii***	***Elymus trachycaulus***	***Elytrigia juncea***	**?**
Date				**ELHI**	**ELSM**	**ELTR**	**ELJU**	**ERCO**
11/17/2007	Veg 1	Wiregrass	PDC and AAM					
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM					
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM					
11/17/2007	Veg 4	Pastureland	PDC and AAM	moderate			moderate	
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS					
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM			common		
11/17/2007	Veg 7	Dry pastureland	PDC and AAM			moderate	few	
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM		moderate			
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM			few	moderate	few
11/17/2007	Veg 10	Oakbrush	PDC and AAM					
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM			common		
11/18/2007	Veg 12	PJ	PDC and AAM			few		
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM					
11/17/2007	Veg A (15)	Pastureland	TS and BTG					
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG					
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG					
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG					
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG					
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG			few		
11/18/2007	Veg G (21)	P-J	PDC and BTG					
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG					
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG			few		
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG			few		
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG					
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG					

Relevé Plot Data	**Relevé ID**	**Plant Community**	**Surveyors**	***Erigeron* sp.**	***Eriogonum* sp.**	***Festuca* sp.**	***Grindelia squarrosa***	***Gutierrezia sarothrae***
Date				**ERIGERON**	**ERIOGONUM**	**FESTUCA**	**GRSQ**	**GUSA**
11/17/2007	Veg 1	Wiregrass	PDC and AAM					
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM					few
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM					few
11/17/2007	Veg 4	Pastureland	PDC and AAM					rare
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS	few	rare	few		
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM					
11/17/2007	Veg 7	Dry pastureland	PDC and AAM				rare	few
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM					
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM					few
11/17/2007	Veg 10	Oakbrush	PDC and AAM					
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM					few
11/18/2007	Veg 12	PJ	PDC and AAM					few
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM					
11/17/2007	Veg A (15)	Pastureland	TS and BTG					
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG					
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG					
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG					
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG					
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG					
11/18/2007	Veg G (21)	P-J	PDC and BTG					
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG					
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG	few				
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG					
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG					
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG					

Relevé Plot Data	**Relevé ID**	**Plant Community**	**Surveyors**	***Hordeum jubatum***	***Juncus arcticus***	***Juniperus osteosperma***	***Juniperus scopulorum***
Date				**HOJU**	**JUAR**	**JUOS**	**JUSC**
11/17/2007	Veg 1	Wiregrass	PDC and AAM	moderate	common		
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM			few	
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM			few	
11/17/2007	Veg 4	Pastureland	PDC and AAM			rare	
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS			common	
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM		moderate	few	
11/17/2007	Veg 7	Dry pastureland	PDC and AAM				
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM			few	
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM			few	
11/17/2007	Veg 10	Oakbrush	PDC and AAM			few	moderate
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM		moderate		
11/18/2007	Veg 12	PJ	PDC and AAM			common	rare
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM	few		few	
11/17/2007	Veg A (15)	Pastureland	TS and BTG				
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG				
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG				
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG			few	
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG			few	
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG			few	
11/18/2007	Veg G (21)	P-J	PDC and BTG			common	
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG				
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG				
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG			few	
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG			few	
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG	few			

Relevé Plot Data	**Relevé ID**	**Plant Community**	**Surveyors**	***Mustard* sp.**	***Opuntia* sp.**	***Penstemon palmeri***	***Peraphyllum ramosissimum***
Date				**MUSTARD**	**OPUNTIA**	**PEPA**	**PERA**
11/17/2007	Veg 1	Wiregrass	PDC and AAM				
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM				
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM				
11/17/2007	Veg 4	Pastureland	PDC and AAM				
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS		moderate		rare
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM			rare	
11/17/2007	Veg 7	Dry pastureland	PDC and AAM				
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM				
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM				
11/17/2007	Veg 10	Oakbrush	PDC and AAM				
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM				
11/18/2007	Veg 12	PJ	PDC and AAM	rare	rare		rare
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM			few	
11/17/2007	Veg A (15)	Pastureland	TS and BTG				
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG				
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG				
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG				
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG				
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG				
11/18/2007	Veg G (21)	P-J	PDC and BTG				
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG				
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG				
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG				
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG		few		
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG				

Relevé Plot Data	**Relevé ID**	**Plant Community**	**Surveyors**	***Sanguisorba minor***	***Sissymbrium* sp.**	***Sissymbrium altissimum***	***Stipa hymenoides***
Date				**SAMI**	**SISSYMBRIUM**	**SIAL**	**STHY**
11/17/2007	Veg 1	Wiregrass	PDC and AAM				
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM				
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM				
11/17/2007	Veg 4	Pastureland	PDC and AAM				few
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS				
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM				
11/17/2007	Veg 7	Dry pastureland	PDC and AAM				
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM				
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM				
11/17/2007	Veg 10	Oakbrush	PDC and AAM				
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM				
11/18/2007	Veg 12	PJ	PDC and AAM				
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM		moderate		
11/17/2007	Veg A (15)	Pastureland	TS and BTG				
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG				
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG				
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG				
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG				
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG			few	
11/18/2007	Veg G (21)	P-J	PDC and BTG				
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG				
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG				
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG	few			
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG				
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG				

Relevé Plot Data	**Relevé ID**	**Plant Community**	**Surveyors**	***Symphorocarpus oreophilus***	***Trifolium* sp.**	***Triglochin maritima***	***Verbascum thapsis***	***Yucca* sp.**
Date				**SYOR**	**TRIFOLIUM**	**TRMA**	**VETH**	**YUCCA**
11/17/2007	Veg 1	Wiregrass	PDC and AAM			few		
11/17/2007	Veg 2	Black sagebrush/ grass	PDC and AAM					
11/17/2007	Veg 3	Black sagebrush/ grass	PDC and AAM					
11/17/2007	Veg 4	Pastureland	PDC and AAM					
11/17/2007	Veg 5	Pinyon/ juniper	PDC, AAM, BG, and TS	few				rare
11/17/2007	Veg 6	Rabbitbrush	PDC and AAM					
11/17/2007	Veg 7	Dry pastureland	PDC and AAM		rare			
11/17/2007	Veg 8	Sagebrush/ grass	PDC and AAM					
11/17/2007	Veg 9	S/G, scattered PJ	PDC and AAM					
11/17/2007	Veg 10	Oakbrush	PDC and AAM	moderate				
11/17/2007	Ref 11	S/G sagebrush	PDC and AAM					
11/18/2007	Veg 12	PJ	PDC and AAM	few				
11/18/2007	Veg 13	Sagebrush/ grass	PDC and AAM					
11/17/2007	Veg A (15)	Pastureland	TS and BTG					
11/17/2007	Veg B (16)	Sagebrush/ grass	TS and BTG					
11/17/2007	Veg C (17)	Sage/ Gambel Oak/ Grass	TS and BTG					
11/17/2007	Veg D (18)	Black sagebrush/ grass	TS and BTG					
11/17/2007	Veg E (19)	Black sagebrush/ grass	TS and BTG					
11/18/2007	Veg F (20)	S/G chipped	PDC and BTG					
11/18/2007	Veg G (21)	P-J	PDC and BTG					
11/18/2007	Veg H (22)	Rabbitbrush	PDC and BTG					
11/18/2007	Veg I (23)	ARNO / CHNA	PDC and BTG					
11/18/2007	Veg J (24)	S/G chipped	PDC and BTG				rare	
11/18/2007	Veg K (25)	Gambel oak	PDC and BTG	few				
11/18/2007	Veg L (26)	S/G (ARNO)	PDC and BTG					

This page intentionally blank

Attachment 2. Vegetation Associations and Species List

This page intentionally blank

VEGETATION SURVEY PROTOCOLS FOR ALTON COAL TRACT LBA

Habitat schemes as set by Mt. Nebo Scientific 2007

Sagebrush/Grass
Artemisia tridentata var. *tridentata*- big sagebrush
Artemisia nova- Black sagebrush
Koeleria micrantha- Junegrass
Poa secunda- Sandberg's bluegrass
Chrysothamnus depressus- longflower rabbitbrush
Gutierrezia sarothrae- Broom snakeweed
Eriogonum racemosum- redroot buckwheat
Gillia agreggata
Linum perenne- Flax
Bouteloua gracilis- Sideoats grama
Bromus tectorum- Cheatgrass
Elymus smithii- Western wheatgrass
Elymus trachycaulus- Slender wheatgrass
Hordeum jubatum- Foxtail barley
Poa pratensis- Kentucky bluegrass
Stipa hymenoides- Indian ricegrass

Meadows (Wet and dry)
Carex sp.-Sedges
Juncus arcticus- wiregrass
Gutierrezia sarothrae- Broom snakeweed
Achillea millefolium- yarrow
Aster ascendens- Pacific aster
Artemisia nova- Black sagebrush
Eriogonum racemosum- redroot buckwheat
Linum lewisii- Flax
Potentilla anserina
Bouteloua gracilis- Sideoats grama
Elymus elymoides- Squirreltail
Elymus smithii- Western wheatgrass
Hordeum jubatum- Foxtail barley
Koeleria micrantha- Junegrass
Muhlenbergia asperifolia- Scratchgrass
Poa pratensis- Kentucky bluegrass

Perennial/Annual Grasses
No quantitative vegetation surveys

Pinyon-Juniper/Sagebrush
Artemisia nova- Black sagebrush
Juniperus osteosperma- Utah juniper
Artemisia tridentata var. *tridentata*- big sagebrush
Phlox austromontana- Desert phlox
Pinus edulis- Pinyon pine
Amelanchier utahensis- Utah serviceberry
Gutierrezia sarothrae- Broom snakeweed

Mountain Brush
Quercus gambelii- Gambel oak
Cercocarpus montanus- Alderleaf mountain mahogany
Peraphyllum ramosissimum- Squaw-apple
Amelanchier utahensis- Utah serviceberry
Elymus smithii- Western wheatgrass
Symphorocarpus oreophilus- snowberry
Agropyron cristatum- Crested wheatgrass

Pinyon-Juniper/Mountain Brush ***Transition between pinyon-juniper and mountain brush***
Quercus gambelii- Gambel oak
Juniperus osteosperma- Utah juniper
Amelanchier utahensis- Utah serviceberry
Pinus edulis- Pinyon pine

Pinyon-Juniper Woodland
Juniperus osteosperma- Utah juniper
Pinus edulis- Pinyon pine
Phlox austromontana- Desert phlox

I.2. Preliminary Jurisdictional Determination for the Alton Coal Tract

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO ATTENTION OF

October 29, 2012

Regulatory Division SPK-2011-01248

Mr. Keith Rigtrup
Bureau of Land Management, Kanab Field Office
319 North 100 East
Kanab, Utah 84741

Dear Mr. Rigtrup:

We are responding to your consultants September 14, 2012 request for a preliminary jurisdictional determination (JD), in accordance with our Regulatory Guidance Letter (RGL) 08-02, for the Alton Coal Tract EIS site. The approximately 3500-acre site is located on or near Kanab Creek, Section 14, Township 39 S, Range 6 W, Salt Lake Meridian, Latitude 37.40757°, Longitude -112.46555°, Alton, Kane County, Utah.

Based on available information, **we concur with the amount and location of wetlands and/or other water bodies on the site as depicted on the enclosed Figures 1 and 2 from Long Resource Consultants, Inc. and Mt. Nebo Scientific, Inc; and Figures 3, 4A-4D prepared by Frontier Corporation (Enclosure 1)**. The approximately 69.07 acres of wetlands and 72,528 linear feet of other water bodies present within the survey area are potential waters of the United States regulated under Section 404 of the Clean Water Act.

A copy of our RGL 08-02 Preliminary Jurisdictional Determination Form (Enclosure 2) for this site is enclosed. Please sign and return a copy of the completed form to this office. Once we receive a copy of the form with your signature we can accept and process a Pre-Construction Notification or permit application for your proposed project.

You should not start any work in potentially jurisdictional waters of the United States unless you have Department of the Army permit authorization for the activity. You may request an approved JD for this site at any time prior to starting work within waters. In certain circumstances, as described in RGL 08-02, an approved JD may later be necessary.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This preliminary determination has been conducted to identify the potential limits of wetlands and other water bodies which may be subject to Corps of Engineers' jurisdiction for the particular site identified in this request. A Notification of Appeal Process and Request for Appeal form is enclosed to notify you of your options with this determination (Enclosure 3).

This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are U.S. Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey on our website under *Customer Service Survey*.

Please refer to identification number SPK-2011-01248 in any correspondence concerning this project. If you have any questions, please contact me at 196 E Tabernacle St, Suite 30, St. George, UT 84770-3474, email *patricia.l.mcqueary@usace.army.mil*, or telephone 435-986-1961. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx*.

Sincerely,

Patricia L. McQueary

Patricia L. McQueary
Senior Project Manager, St. George Office
Utah-Nevada Regulatory Branch

Enclosures
Enclosure 1: Figures of the Project Area
Enclosure 1: Preliminary JD Form for signature
Enclosure 3: Appeal Form

Copy Furnished without enclosures
Mr. Robert E. Long, Long Resource Consultants, Inc., 1960 West Deep Creek Road, Morgan, Utah 84050
Mr. Patrick D. Collins, Mt. Nebo Scientific, Inc., 330 East 400 South, Suite 6, P.O. Box 337, Springville, Utah 84663
Mr. Larry Johnson, Alton Coal Development, LLC, 463 North 100 West, Suite 1, Cedar City, Utah 84720
Mr. Dennis Wenger, Frontier Corporation, 221 North Gateway Drive, Suite B, Providence, Utah 84332
Mr. Benjamin Gaddis, SWCA, 257 East 200 South, Suite 200, Salt Lake City, Utah 84111

PRELIMINARY JURISDICTIONAL DETERMINATION FORM
Sacramento District

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Regulatory Branch: **Nevada-Utah** File/ORM #: **SPK-2011-01248** PJD Date: **October 29, 2012**

State: **UT** City/County: **Alton, Kane County**
Nearest Waterbody:

Location (Lat/Long): **37.4075°, -112.4655°**

Size of Review Area: **~3500** acres

Name/Address Of Property Owner/Potential Applicant
Keith Rigtrup
Bureau of Land Management, Kanab Field Office
319 North 100 East
Kanab, Utah 84741

Identify (Estimate) Amount of Waters in the Review Area
Non-Wetland Waters:
linear feet **72528** ft wide acre(s)
Stream Flow: **Mixed**

Wetlands: **69.07** acre(s) Cowardin Class: **N/A**

Name of any Water Bodies on the site identified as Section 10 Waters: Tidal: Non-Tidal:

☒ Office (Desk) Determination
☒ Field Determination:
Date(s) of Site Visit(s): **June 19, July 25, August 30, 2012**

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply – checked items should 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:
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Data sheets prepared by the Corps.
☐ Corps navigable waters' study.
☐ U.S. Geological Survey Hydrologic Atlas:
  ☐ USGS NHD data.
  ☐ USGS HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: **1:24K; UT-BALD KNOLL**
☐ USDA Natural Resources Conservation Service Soil Survey.
☐ National wetlands inventory map(s).
☐ State/Local wetland inventory map(s).
☐ FEMA/FIRM maps.
☐ 100-year Floodplain Elevation (if known):
☒ Photographs: ☒ Aerial
  ☒ Other
☒ Previous determination(s). File no. and date of response letter: **SPK-2011-00216, June 30, 2011; SPK-2009-01008, September 27, 2010**
☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Patricia L McGuire 10/29/2012
Signature and Date of Regulatory Project Manager (REQUIRED)

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:
1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.
2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Keith Rigtrup Bureau of Land Management, Kanab Field Office 319 North 100 East Kanab, Utah 84741	File No.: SPK-2011-01248	Date: October 29, 2012

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at *http://www.usace.army.mil/cecw/pages/reg_materials.aspx* or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

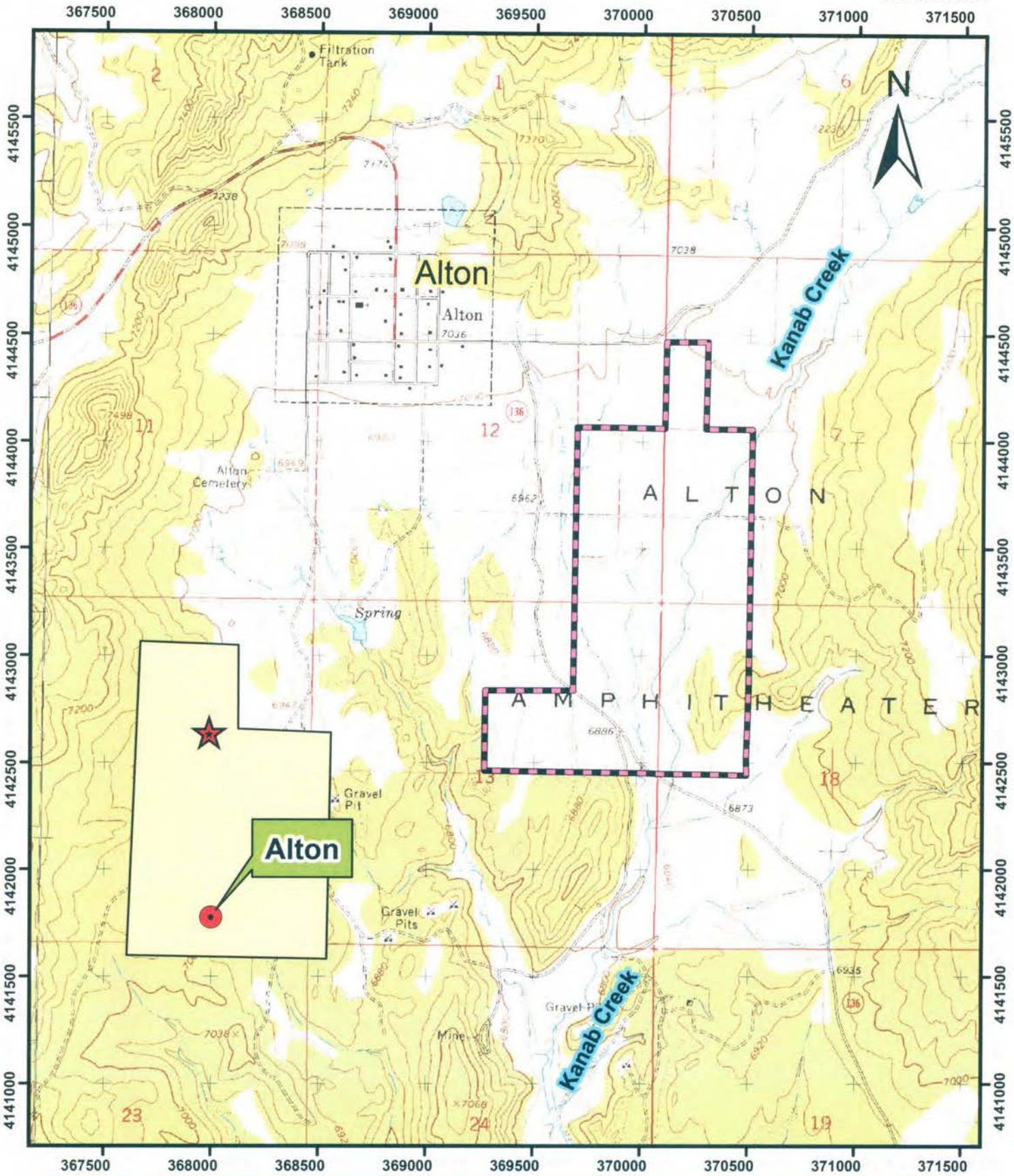
ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

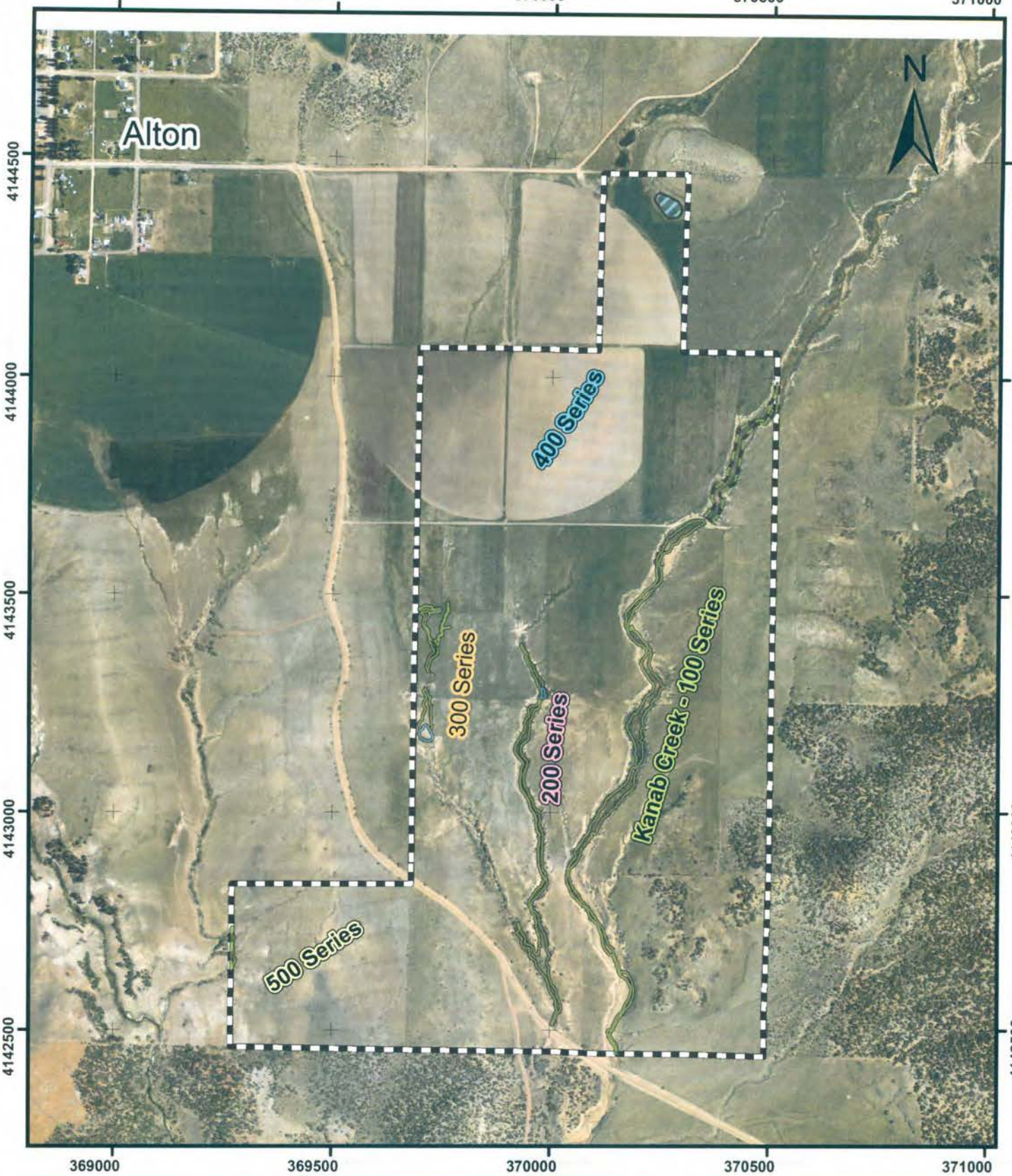
If you have questions regarding this decision and/or the appeal process you may contact: Karen Clementsen Project Manager, St. George Office Utah-Nevada Regulatory Branch U.S. Army Corps of Engineers 196 E Tabernacle St, Suite 30, St. George, UT 84770-3474 Phone: 435-986-1961, FAX 916-557-6877 Email: Karen.L.Clementsen@usace.army.mil (Use this address for submittals to the **district** engineer)	If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh Administrative Appeal Review Officer U.S. Army Corps of Engineers South Pacific Division, CESPD-PDO 1455 Market Street, 2052B San Francisco, California 94103-1399 Phone: 415-503-6574, FAX 415-503-6646) Email: Thomas.J.Cavanaugh@usace.army.mil (Use this address for submittals to the **division** engineer)

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:



Wetland Survey of Alton Coal - Private Lease Area	Fig 1. Study Area Location Map	
By: Long Resource Consultants, Inc. Morgan, Utah Mt. Nebo Scientific, Inc. Springville, Utah	General Location of Wetland Study Area southeast of Alton, Utah.	
	Coordinate System: UTM, NAD 1983, Zone 12 North	
	Alton, Utah USGS 7.5' Topographic Map	1 inch = 2,000 feet
	August 11, 2012	0 500 1,000 2,000 3,000 4,000 Feet



Wetland Survey of Alton Coal - Private Lease Area	Figure 2. Stream Channels
By: Long Resource Consultants, Inc. Morgan, Utah Mt. Nebo Scientific, Inc. Springville, Utah	Note: Stream channel numbering system used for data points. Coordinate System: UTM, NAD 1983, Zone 12 North NAIP 2011 Aerial Photography 1 inch = 1,000 feet August 11, 2012 0 255 510 1,020 1,530 2,040 Feet

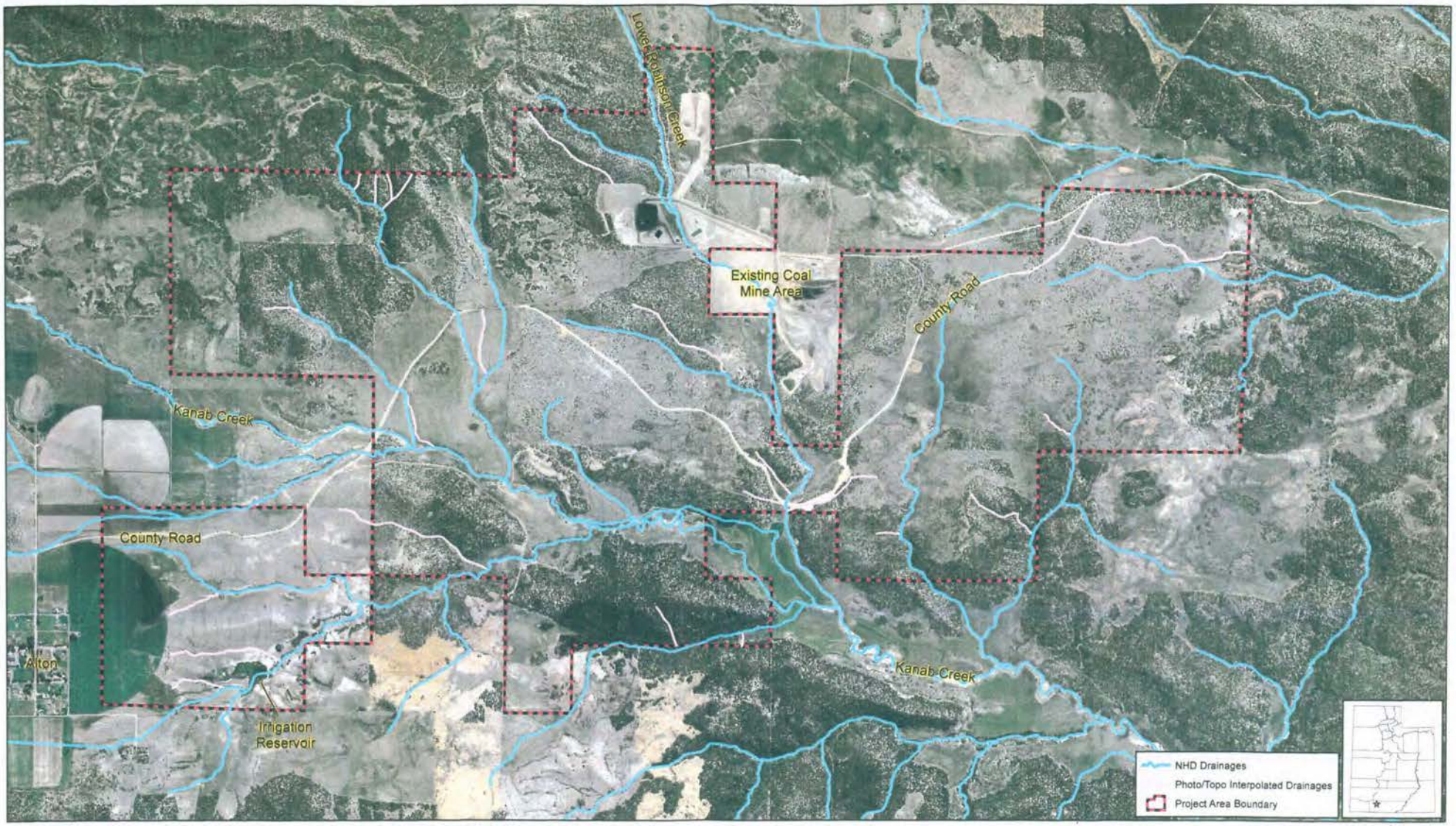


Figure 3. Drainages Investigated for Stream Channels with an Ordinary High Water Mark (OHWM).

Map Date: July 23, 2012
Image Date: June 22, 2011

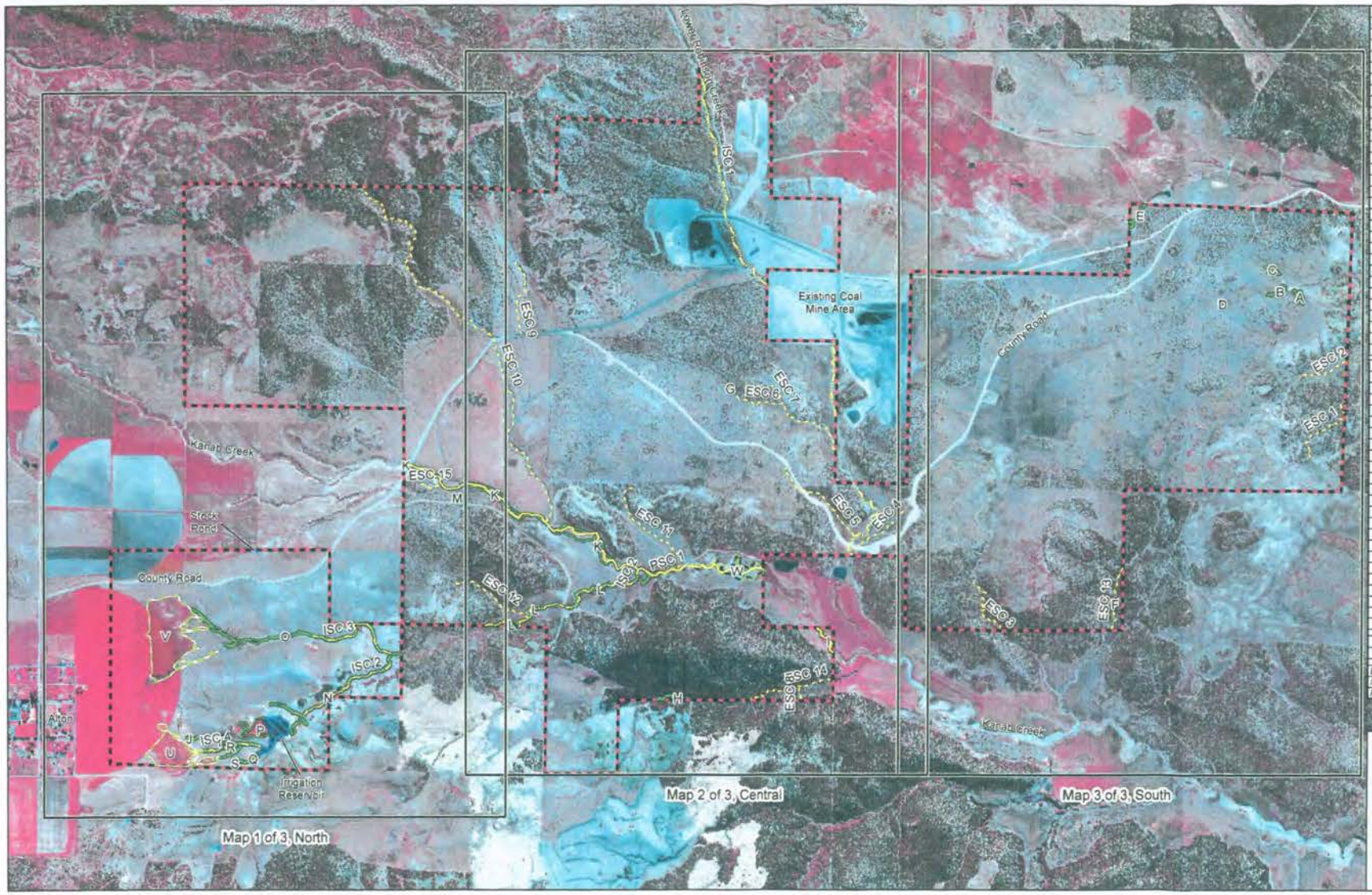
N

1 inch = 1,800 feet

0 1,000 2,000 4,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435) 753-9502

Basemap color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.



Wetland	Area (Acres)
Riparian Wet Meadow	
A	0.55
B	0.30
C	0.13
D	0.02
E	0.37
F	0.02
G	0.01
H	0.20
I	0.24
J	0.13
K	6.88
L	1.46
M	0.10
N	1.72
O	2.31
P	2.57
Q	0.26
R	0.80
S	0.22
T	0.23
Total:	**18.52**
Irrigated Wet Meadow	
U	9.40
V	22.23
Total:	**31.63**
Mixed Riparian, Scrub-Shrub/Wet Meadow	
W	3.80
Total:	**3.80**

Stream	Length (feet)
ESC 1	1,564
ESC 2	1,134
ESC 3	1,423
ESC 4	1,438
ESC 5	2,021
ESC 6	2,863
ESC 7	452
ESC 8	290
ESC 9	1,545
ESC 10	8,727
ESC 11	2,492
ESC 12	1,718
ESC 13	1,318
ESC 14	1,893
ESC 15	421
Total:	**29,298**
ISC 1	8,165
ISC 2	5,897
ISC 3	2,105
ISC 4	1,462
Total:	**17,629**
PSC 1	9,110
Total:	**9,110**

Waters	Area (Acres)
Reservoir	4.01

ESC = Ephemeral Stream Channel
ISC = Intermittent Stream Channel
PSC = Perennial Stream Channel

Figure 4A. Wetland and Stream Channel Delineation, Index Map.

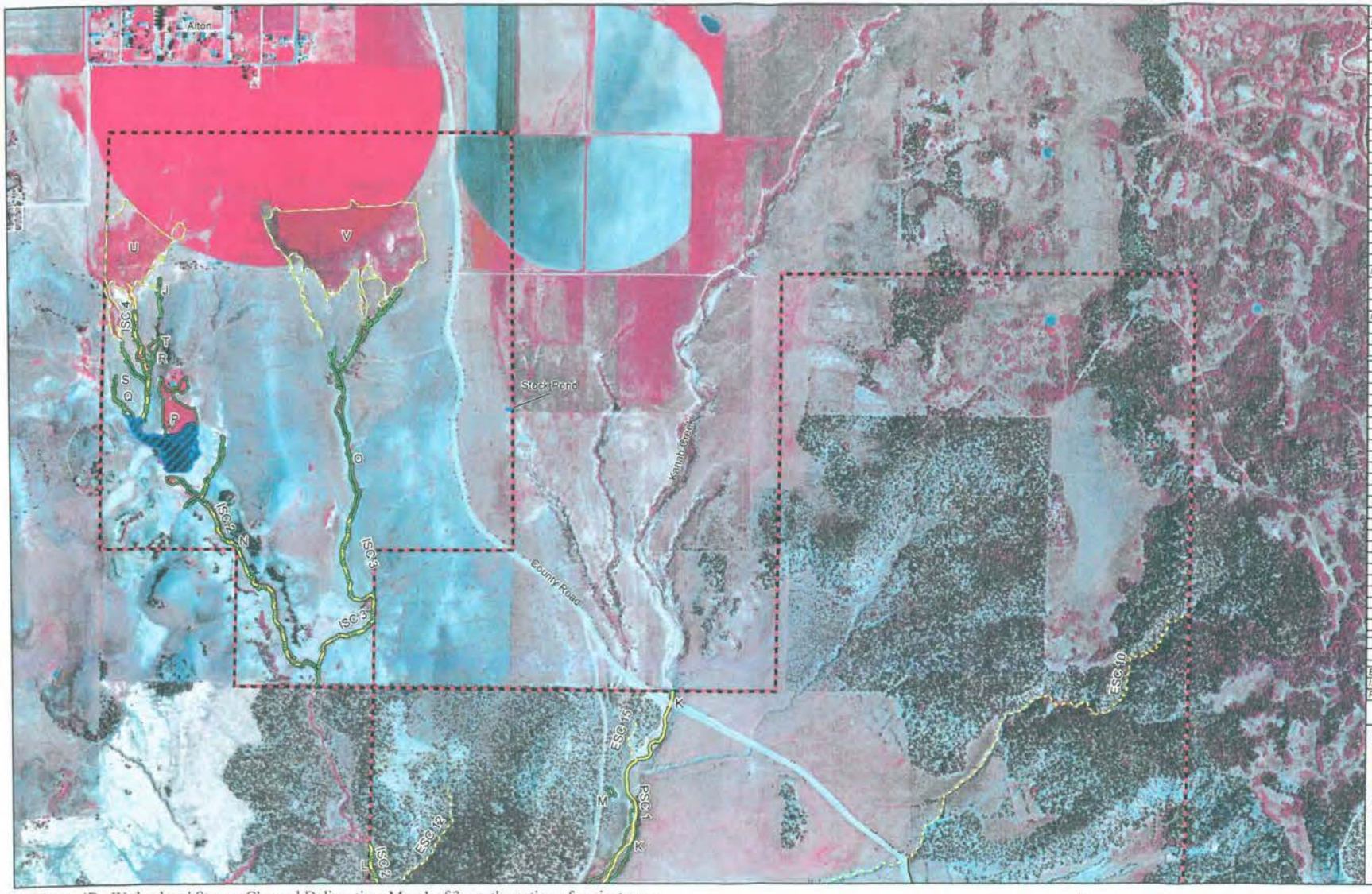
Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Map Date: September 12, 2012
Image Date: June 22, 2011

N

1 inch = 1,800 feet
0 1,000 2,000 4,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435) 753 9502



Wetland	Area (Acres)
Riparian Wet Meadow	
A	0.55
B	0.30
C	0.13
D	0.02
E	0.37
F	0.02
G	0.01
H	0.20
I	0.24
J	0.13
K	6.88
L	1.46
M	0.10
N	1.72
O	2.31
P	2.57
Q	0.26
R	0.80
S	0.22
T	0.23
Total:	**18.52**
Irrigated Wet Meadow	
U	9.40
V	22.23
Total:	**31.63**
Mixed Riparian, Scrub-Shrub/Wet Meadow	
W	3.80
Total:	**3.80**

Stream	Length (feet)
ESC 1	1,564
ESC 2	1,134
ESC 3	1,423
ESC 4	1,438
ESC 5	2,021
ESC 6	2,863
ESC 7	452
ESC 8	290
ESC 9	1,545
ESC 10	8,727
ESC 11	2,492
ESC 12	1,716
ESC 13	1,318
ESC 14	1,893
ESC 15	421
Total:	**20,295**
ISC 1	8,165
ISC 2	5,897
ISC 3	2,105
ISC 4	1,462
Total:	**17,629**
PSC 1	9,110
Total:	**9,110**

Waters	Area (Acres)
Reservoir	4.01

ESC = Ephemeral Stream Channel
ISC = Intermittent Stream Channel
PSC = Perennial Stream Channel

2012 Stream & Waters Delineation
- Ephemeral Stream Channel
- Intermittent Stream Channel
- Perennial Stream Channel, Kanab Creek
- Irrigation Reservoir

2012 Wetland Delineation
- Irrigated Wet Meadow
- Mixed Riparian, Scrub-Shrub/Wet Meadow
- Riparian Wet Meadow
- Project Area Boundary

Figure 4B. Wetland and Stream Channel Delineation, Map 1 of 3, north portion of project area.

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

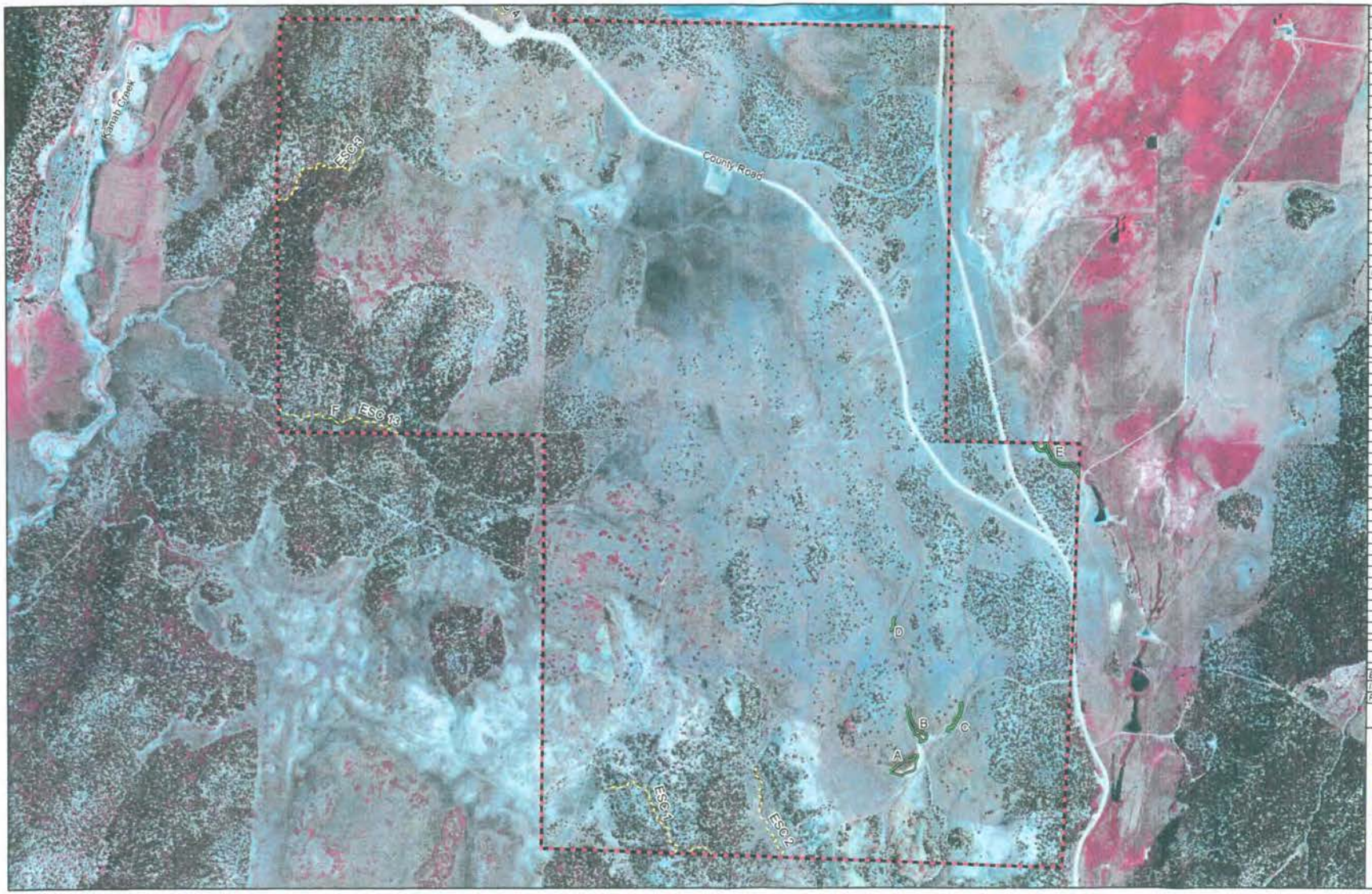
Map Date: September 12, 2012
Image Date: June 22, 2011

N

1 inch = 950 feet

0 500 1,000 2,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435) 753-9502



Wetland	Area (Acres)
Riparian Wet Meadow	
A	0.56
B	0.30
C	0.13
D	0.02
E	0.37
F	0.02
G	0.01
H	0.20
I	0.24
J	0.13
K	6.88
L	1.46
M	0.10
N	1.72
O	2.31
P	2.57
Q	0.26
R	0.80
S	0.22
T	0.23
Total:	**18.52**
Irrigated Wet Meadow	
U	9.40
V	22.23
Total:	**31.63**
Mixed Riparian: Scrub-Shrub/Wet Meadow	
W	3.80
Total:	**3.80**

Stream	Length (feet)
ESC 1	1,564
ESC 2	1,134
ESC 3	1,423
ESC 4	1,438
ESC 5	2,021
ESC 6	2,863
ESC 7	452
ESC 8	290
ESC 9	1,545
ESC 10	8,727
ESC 11	2,492
ESC 12	1,716
ESC 13	1,316
ESC 14	1,893
ESC 15	421
Total:	**29,295**
ISC 1	8,185
ISC 2	5,897
ISC 3	2,105
ISC 4	1,452
Total:	**17,639**
PSC 1	9,110
Total:	**9,110**

Waters	Area (Acres)
Reservoir	4.01

ESC = Ephemeral Stream Channel
ISC = Intermittent Stream Channel
PSC = Perennial Stream Channel

2012 Stream & Waters Delineation
- Ephemeral Stream Channel
- Intermittent Stream Channel
- Perennial Stream Channel, Kanab Creek
- Irrigation Reservoir

2012 Wetland Delineation
- Irrigated Wet Meadow
- Mixed Riparian: Scrub-Shrub/Wet Meadow
- Riparian Wet Meadow
- Project Area Boundary

Figure 4D. Wetland and Stream Channel Delineation, Map 3 of 3, south portion of project area.

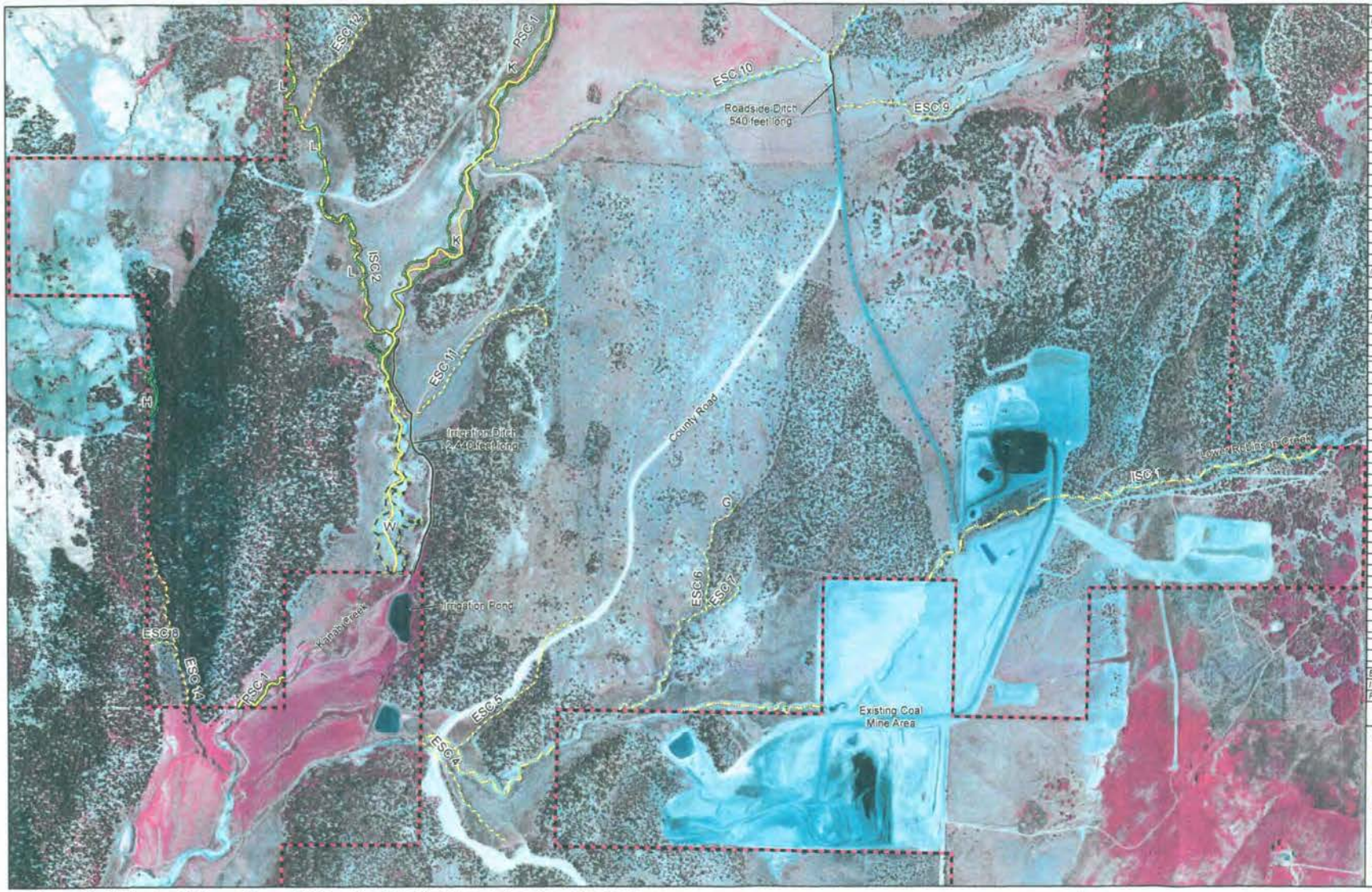
Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Map Date: September 12, 2012
Image Date: June 22, 2011

N

1 inch = 950 feet
0 500 1,000 2,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435) 753-9502



Wetland	Area (Acres)
Riparian Wet Meadow	
A	0.55
B	0.30
C	0.13
D	0.02
E	0.37
F	0.02
G	0.01
H	0.20
I	0.24
J	0.13
K	6.88
L	1.46
M	0.10
N	1.72
O	2.31
P	2.57
Q	0.26
R	0.80
S	0.22
T	0.23
Total:	**18.52**
Irrigated Wet Meadow	
U	9.40
V	22.23
Total:	**31.63**
Mixed Riparian, Scrub-Shrub/Wet Meadow	
W	3.80
Total:	**3.80**

Stream	Length (feet)
ESC 1	1,564
ESC 2	1,134
ESC 3	1,423
ESC 4	1,438
ESC 5	2,021
ESC 6	2,863
ESC 7	452
ESC 8	290
ESC 9	1,545
ESC 10	8,727
ESC 11	2,492
ESC 12	1,716
ESC 13	1,316
ESC 14	1,893
ESC 15	421
Total:	**29,296**
ISC 1	8,165
ISC 2	5,897
ISC 3	2,105
ISC 4	1,462
Total:	**17,629**
PSC 1	9,110
Total:	**9,110**

Waters	Area (Acres)
Reservoir	4.01

ESC = Ephemeral Stream Channel
ISC = Intermittent Stream Channel
PSC = Perennial Stream Channel

2012 Stream & Waters Delineation
- Ephemeral Stream Channel
- Intermittent Stream Channel
- Perennial Stream Channel, Kanab Creek
- Irrigation Reservoir

2012 Wetland Delineation
- Irrigated Wet Meadow
- Mixed Riparian, Scrub-Shrub/Wet Meadow
- Riparian Wet Meadow
- Project Area Boundary

Figure 4C. Wetland and Stream Channel Delineation, Map 2 of 3, central portion of project area.

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Map Date: September 12, 2012
Image Date: June 22, 2011

N

1 inch = 950 feet
0 500 1,000 2,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435) 753-9502

I.3. Wetland and Stream Delineation Technical Report - Alton Coal Tract Lease by Application Project

FRONTIER CORPORATION USA
Environmental Consultants

Wetland and Stream Delineation Technical Report

Alton Coal Tract Lease by Application Project

Approximately 3,581-Acre Project Area
Sections 12, 13, 24 & 25, Township 39 South, Range 6 West
Sections 7, 18, 19, 20, 30 & 31, Township 39 South, Range 5 West
Salt Lake Base and Meridian
Near Alton, Kane County, Utah

Prepared For:

Alton Coal Development, LLC
463 North 100 West, Suite 1
Cedar City, UT 84721

Attn: Larry Johnson, Mine Manager

Prepared By:

Frontier Corporation USA
221 N. Gateway Drive, Suite B
Providence, UT 84332

Dennis Wenger, Sr. Wetlands Ecologist
Jeff Boice, Wetlands Scientist
Collin Covington, Wetlands Scientist

July 2012

TABLE OF CONTENTS

1.0 INTRODUCTION 1

1.1 Project Background 1
1.2 Scope of the Wetlands and Stream Channel Delineation 1

2.0 METHODS 5

2.1 Wetlands Delineation 5
2.2 Stream Channel Delineation 5

3.0 LAND USE AND CLIMATE 6

4.0 DELINEATION RESULTS 8

4.1 Wetlands 8
4.1.1 Riparian Wet Meadow 14
4.1.2 Irrigated Wet Meadow 15
4.1.3 Mixed Riparian, Scrub-Shrub/Wet Meadow 15
5.1 Streams and other Water Bodies 15
5.1.1 Perennial Stream Channels 16
5.1.2 Intermittent Stream Channels 16
5.1.3 Ephemeral Stream Channels 17
5.1.4 Irrigation Reservoir 17
5.1.5 Irrigation Ditch 18

6.0 SUMMARY 18

7.0 REFERENCES CITED 20

List of Figures

Figure 1. General Site Location Map 2
Figure 2A. Project Area Location Map – Topographic Base 3
Figure 2B. Project Area Location Map – Aerial Image Base 4
Figure 3. Drainages Investigated for Stream Channels with an Ordinary High Water Mark 7
Figure 4A. Wetland and Stream Channel Delineation, Index Map 9
Figure 4B. Wetland and Stream Channel Delineation Map, Map 1 of 3 10
Figure 4C. Wetland and Stream Channel Delineation Map, Map 2 of 3 11
Figure 4D. Wetland and Stream Channel Delineation Map, Map 3 of 3 12

List of Tables

Table 1. Wetlands delineated within the project area 8
Table 2. Common plant species observed in the project area 13
Table 3. Stream channels and water bodies delineated within the project area 15

Appendices

Appendix A: Wetland Delineation Maps
Appendix B: Wetland Delineation Data Sheets
Appendix C: Stream Channel Delineation Maps
Appendix D: Arid West Ordinary High Water Data Sheets
Appendix E: Representative Photos of Wetland and Stream Channel Conditions

1.0 INTRODUCTION

1.1 Project Background

Frontier Corporation USA (Frontier) was retained by Alton Coal Development, LLC (Alton Coal) to prepare a wetland and stream delineation technical report for the Alton Coal Tract Lease by Application (LBA) project located approximately 0.1 mile southeast of Alton and 2.9 miles east of U.S. Highway 89 in Kane County, Utah (Figure 1). The project area is approximately 3,581 acres in size and is situated on both public lands and private properties in the Alton Amphitheater (Figures 2A and 2B). The public lands are administered by the U.S. Department of Interior Bureau of Land Management (BLM). The project area can be accessed from U.S. Highway 89 via County Road 136.

The location of the project area can be referenced on the Alton and Bald Knoll, Utah U.S. Geologic Survey (USGS) 7.5-minute quadrangle topographic maps (Figure 2A). The project area covers portions of Sections 12, 13, 24 and 25, Township 39 South, Range 6 West and Sections 7, 18, 19, 20 30 and 31, Township 39 South, Range 5 West, Salt Lake Base Meridian. Kanab Creek flows north to south through the approximate center of the project area. The elevation of the project area ranges from approximately 7,420 feet in the upper foothills northeast of Kanab Creek to 6,580 feet in the lower (southern) Kanab Creek valley bottom (Figure 2A).

The BLM is preparing a supplemental draft environmental impact statement (SDEIS) to analyze and disclose potential impacts that would result from the leasing and mining of coal reserves within the project area. The BLM's decision with respect to the project area will pertain only to leasing the tract; however, the potential impacts of mining the tract will be analyzed in the SDEIS because a coal mine would be a logical extension of the land lease. This technical report identifies and delineates the boundaries of existing wetlands, streams, and other water bodies in the project area for analysis in the SDEIS. The wetland and stream channel delineation has been completed at a sufficient level of detail for the issuance of a preliminary jurisdictional determination (PJD) by the U.S. Army Corps of Engineers (USACE). The PJD will identify the potential limits of wetlands, streams and other water bodies that may be subject to the USACE's regulatory jurisdiction under the federal Clean Water Act.

1.2 Scope of the Wetlands and Stream Channel Delineation

The scope of the wetlands and stream channel delineation included:

- Identification and documentation of existing wetland, stream and water body conditions;
- Delineation and surveying of wetland, stream channel and other water body boundaries;
- Preparation of delineation maps and calculation of delineated channel lengths and wetland and water body acreage; and
- Preparation of this delineation technical report in accordance with USACE reporting standards.

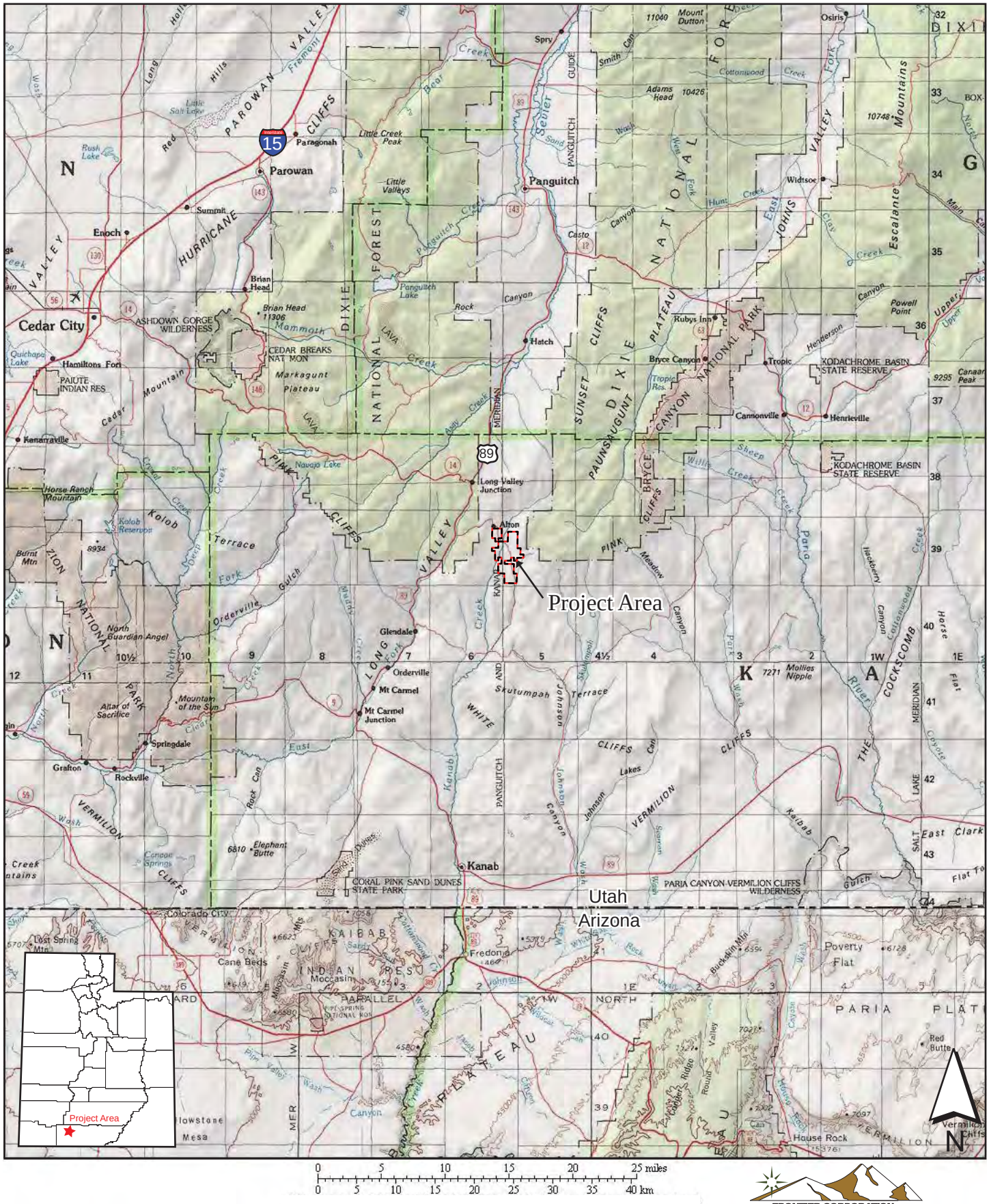


Figure 1. General Site Location Map.

FRONTIER CORPORATION USA
Environmental Consultants

Base map is 500K topographic map from U.S. Geological Survey

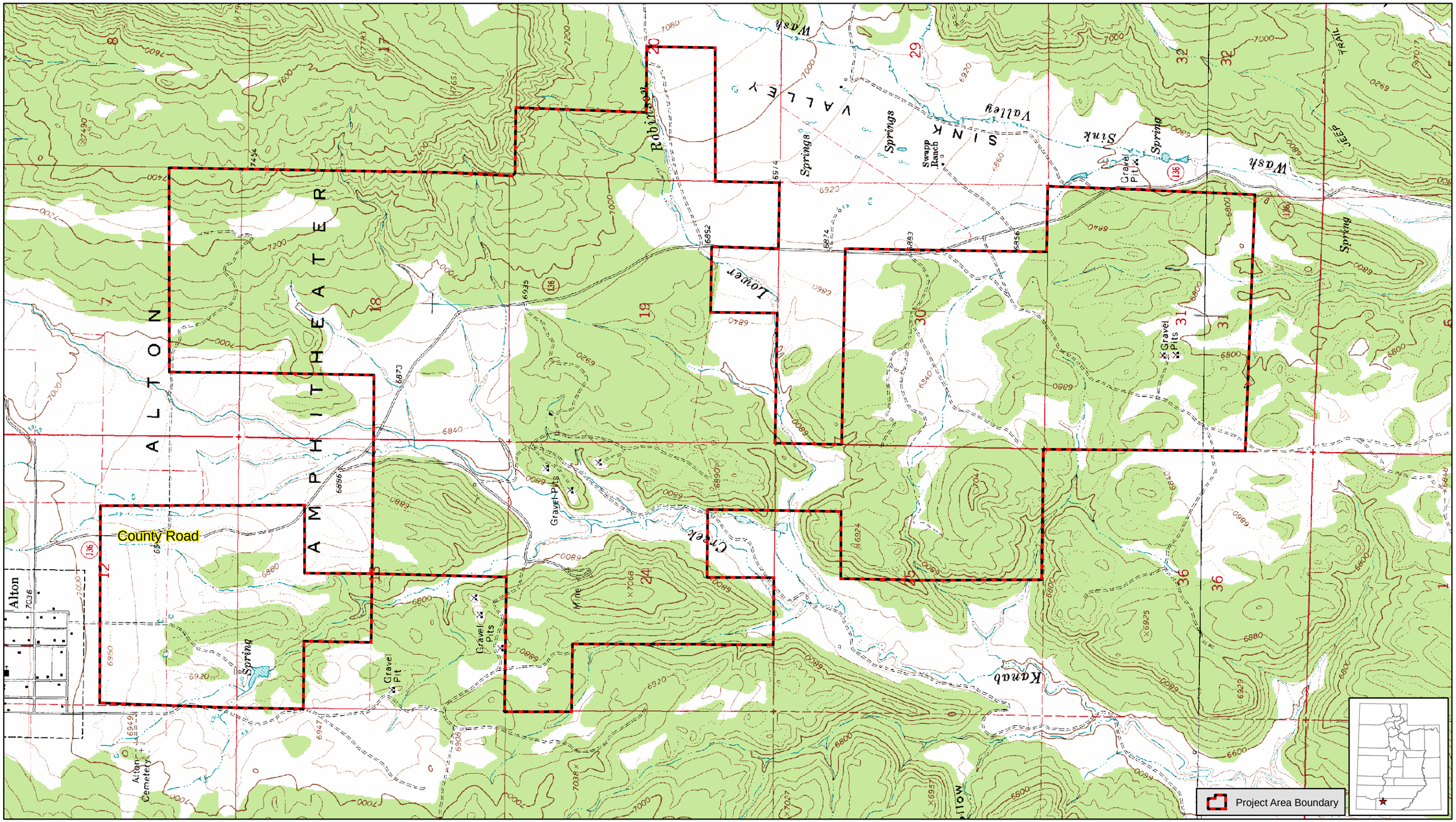


Figure 2A. Project Area Location Map - Topographic Base.

Map Date: July 20, 2012

Topographic base adapted from the USGS Alton and Bald Knoll, UT 7.5-minute quadrangles.

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

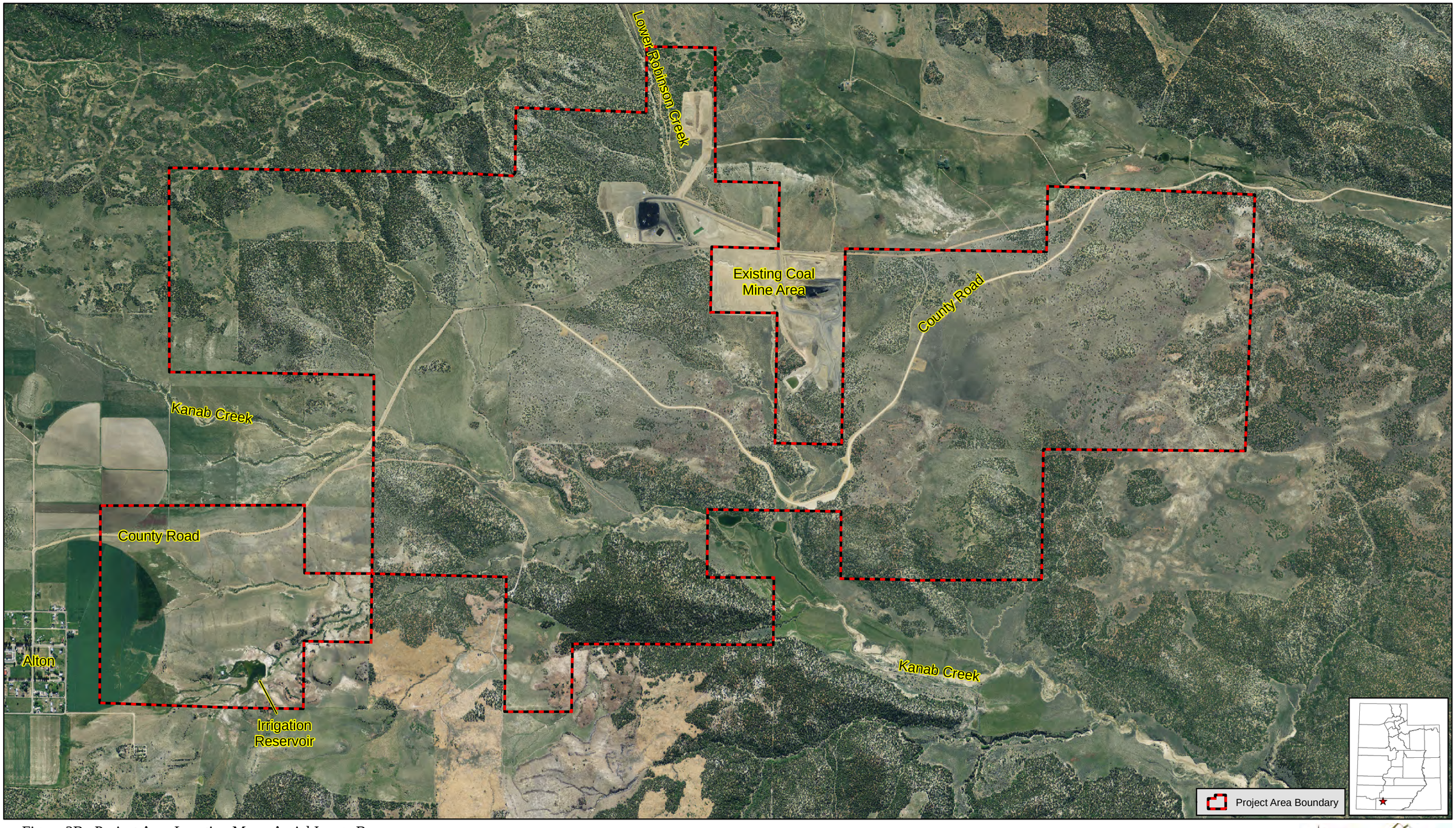


Figure 2B. Project Area Location Map - Aerial Image Base.

Map Date: July 20, 2012
Image Date: June 22, 2011

N

1 inch = 1,800 feet

0 1,000 2,000 4,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Basemap color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

2.0 METHODS

2.1 Wetlands Delineation

Frontier scientists completed wetland field investigations in May and June 2012. Wetlands were identified and delineated in accordance with the three-parameter approach (hydrology, soil, and vegetation) specified in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008). One meter pixel resolution, 2011 color infrared aerial imagery was used to produce 1-inch = 200-feet field maps, which were used to identify potential wetland areas, stream channels and other water bodies for sampling. The aerial imagery was obtained from the Utah Automated Geo Reference Center (Utah AGRC 2012).

Paired sample points were located on either side of wetland boundaries to contrast wetland/upland conditions. The locations of wetland delineation sample points are shown on the delineation maps provided in Appendix A.

The presence or absence of hydrological indicators (e.g., standing water, fresh alluvial deposits, root zone oxidation, drainage patterns, etc.) was noted at each sample point. Soil pits were excavated to characterize soil profiles and soil/water conditions at each sample point. Soil horizonation, texture, moisture content, depth to saturation, and/or standing water were noted for each soil pit. The presence or absence of particulate organic matter, organic matter staining, redoximorphic features, and gleying were also noted if found. Soil colors were determined with *Munsell Soil Color Charts* (Munsell 2000).

The percent cover of observed plant species was visually estimated and recorded. Dominant plant species were identified in accordance with the USACE's 50/20 Rule and Prevalence Index. Plant identification was determined using *A Utah Flora* (Welsh et al. 2003), *Weeds of the West* (Whitson et al. 2006) and the *USDA-NRCS Plants Database* (USDA-NRCS 2012). The scientific nomenclature and wetland indicator status of plant species was determined using the USACE's *Arid West Final Draft Ratings* (USACE 2012).

The hydrological, soil, and vegetative data recorded at the sample points were transcribed onto the USACE Arid West Region Wetland Determination Data Forms (Appendix B). A total of 123 wetland delineation sample points and data forms were completed. Sample point locations and delineated wetland boundaries were surveyed with a sub-meter Trimble GeoExplorer global positioning system (GPS). The aerial imagery, wetland boundary surveys and sample point locations were incorporated into a geographic information system (GIS) database using ArcGIS 9.3. The GIS was used to produce wetland and stream delineation maps and to calculate wetland and water body acreages and stream channel lengths.

2.2 Stream Channel Delineation

Stream channels and other water bodies were delineated based on the presence of an ordinary high water mark (OHWM). The project area was systematically inspected for stream channels and other water bodies in April and May 2012. This included an inspection of all water bodies and stream drainages denoted on the USGS 7.5-minute topographic quadrangle maps and the

National Hydrography Dataset (NHD); and other potential stream drainages that were interpolated using the USGS topographic contours and aerial imagery (Figure 3). The NHD data was obtained online at: http://nhd.usgs.gov/.

The USGS and NHD stream drainages were shown as blue lines and the potential stream drainages that were interpolated using the topographic contours and aerial imagery were shown as pink lines on the 1-inch = 200-feet aerial field maps. Each drainage was inspected in the field. The entire length of the drainage was walked and a representative reach (or reaches) was sampled and evaluated for the presence of an OHWM stream channel using the USACE's 2010 Arid West OHWM data sheet (USACE 2010). The locations of OHWM sample points are shown on the stream channel delineation maps provided in Appendix C. A total of 62 sample points for OHWM data sheets were completed (Appendix D).

Drainages that had well-defined bed and banks, evidence of alluvial sorting of substrates and an OHWM were delineated as stream channels and surveyed with the GPS. Delineated stream channels were classified as being ephemeral, intermittent or perennial. Ephemeral streams only have flow in response to surface runoff from snow melt and rain events. Intermittent streams typically have seasonal flow from surface runoff and groundwater accretion. Perennial streams have year-round flow. Other water bodies delineated within the project area included an irrigation reservoir and an irrigation ditch. An OHWM was identified and mapped, but the 2010 OHWM datasheets were used for the irrigation reservoir or irrigation ditch because these are not arid west stream features.

A total of 1,405 photos of the project area were taken over the course of the wetland and stream channel delineation field work to document existing site conditions throughout the project area. Electronic copies of the photos, and an overall photo point location map, were provided to the USACE on a DVD. Many of the photos on the DVD are of upland areas that did not meet either the wetland or stream channel delineation criteria. A selection of representative photos of the wetland and stream channels that were delineated in the project area are provided in Appendix E. The photo point locations for the Appendix E photolog are shown on the wetland and stream delineation maps provided in Appendices A and C, respectively.

3.0 LAND USE AND CLIMATE

The project area is situated on semi-arid rangeland dominated by juniper, pinyon pine, sagebrush, rabbitbrush, dry meadows, and irrigated meadows and alfalfa fields. The past and present land use of the project area has been chiefly public lands for livestock grazing and private ranching and farming for beef cattle. Kanab Creek is the only perennial source of surface water within the project area, and the lack of water on this semi-arid landscape is the main factor limiting the amount of livestock grazing and farming that can be sustained.

Precipitation data for Alton, Utah was obtained from the Western Regional Climate Center website: www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ut0086. Annual precipitation is approximately 16.4 inches. Precipitation occurs almost uniformly over the calendar year. On average, January and February are the wettest months and May and June are the driest months.

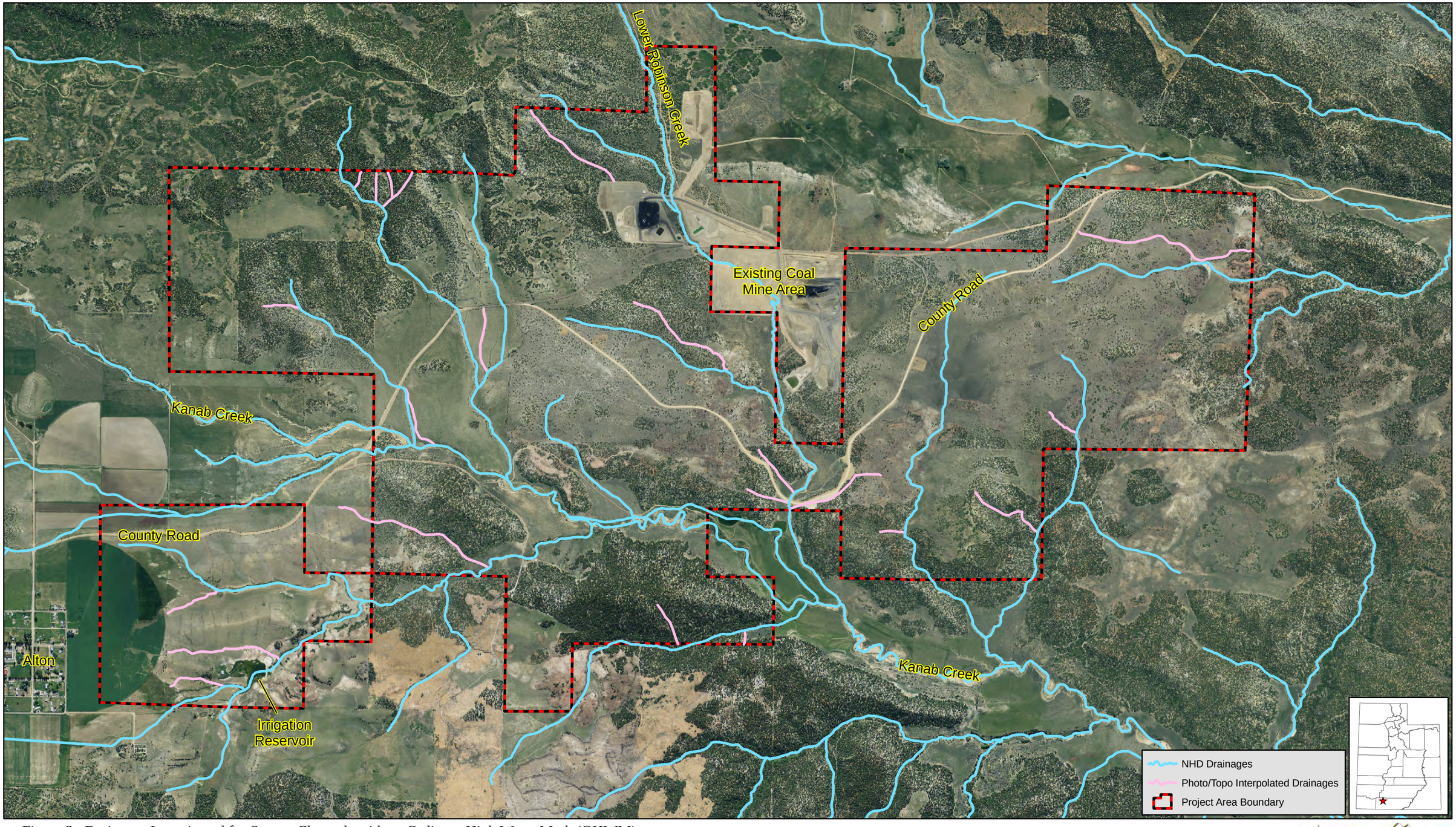


Figure 3. Drainages Investigated for Stream Channels with an Ordinary High Water Mark (OHWM).

Map Date: July 23, 2012
Image Date: June 22, 2011

N

1 inch = 1,800 feet

0 1,000 2,000 4,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Basemap color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

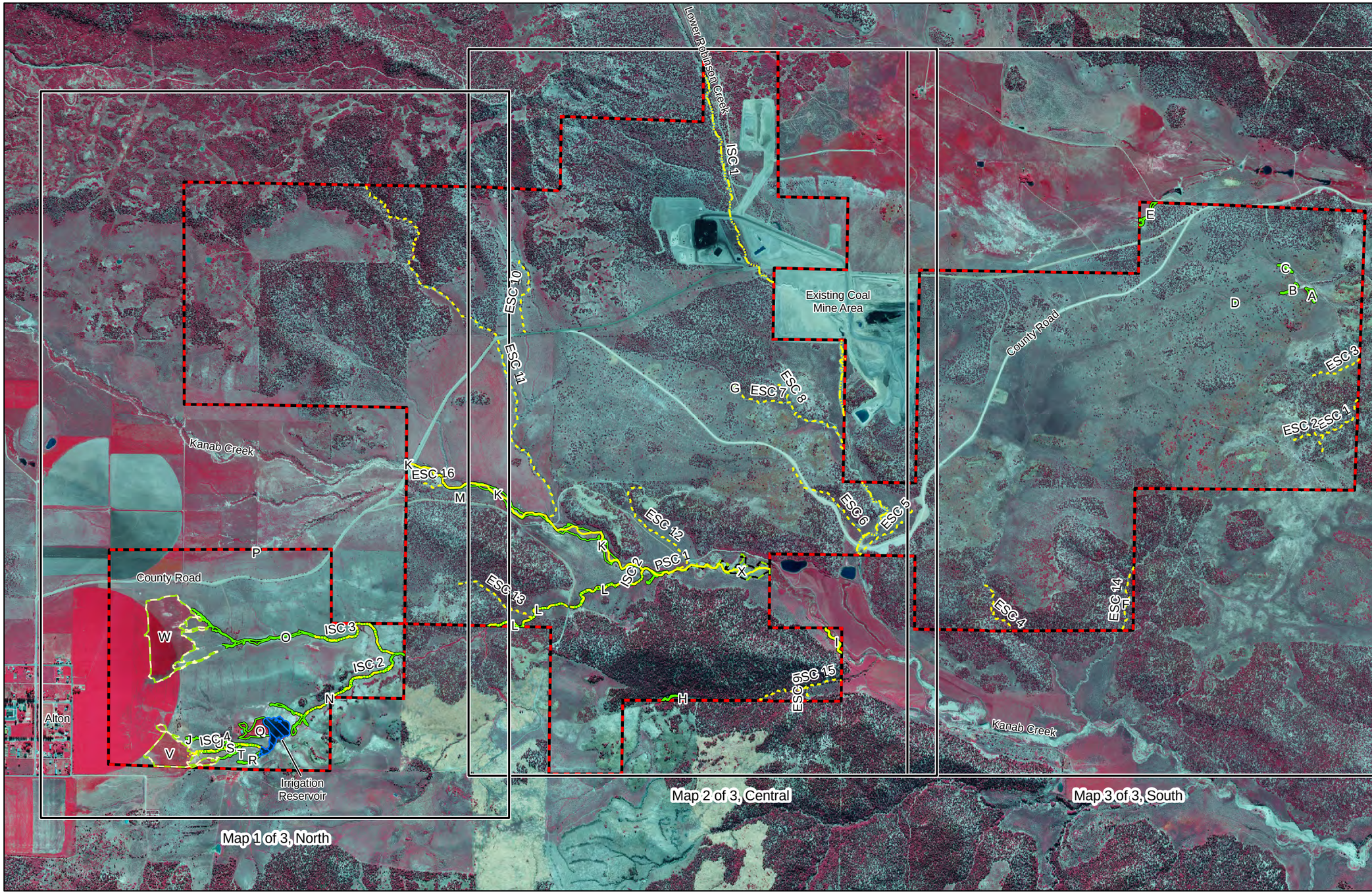
4.0 DELINEATION RESULTS

4.1 Wetlands

A total of 24 individual wetland areas, totaling approximately 53.97 acres in size, were delineated within the project area boundaries (Table 1). The delineated wetlands were classified into three habitat types. Approximately 18.54 acres were classified as riparian wet meadow wetlands, 31.63 acres were classified as irrigated wet meadow wetlands, and 3.80 acres were classified as mixed riparian scrub-shrub/wet meadow wetlands (Table 1) (Figures 4A-4D). Descriptions of the three wetland habitat types are provide in the following report sections. A list of the common wetland and upland plant species observed during the delineation fieldwork is provided in Table 2.

Table 1. Wetlands delineated within the project area.

Wetland	Area (Acres)
Riparian Wet Meadow	
A	0.55
B	0.30
C	0.13
D	0.02
E	0.37
F	0.02
G	0.01
H	0.20
I	0.24
J	0.13
K	6.88
L	1.46
M	0.10
N	1.72
O	2.31
P	0.02
Q	2.57
R	0.26
S	0.80
T	0.22
U	0.23
Total:	**18.54 ac**
Irrigated Wet Meadow	
V	9.40
W	22.23
Total:	**31.63 ac**
Mixed Riparian, Scrub-Shrub/Wet Meadow	
X	3.80
Total:	**3.80 ac**



Wetland	Area (Acres)
Riparian Wet Meadow	
A	0.55
B	0.30
C	0.13
D	0.02
E	0.37
F	0.02
G	0.01
H	0.20
I	0.24
J	0.13
K	6.88
L	1.46
M	0.10
N	1.72
O	2.31
P	0.02
Q	2.57
R	0.26
S	0.80
T	0.22
U	0.23
Total:	**18.54**
Irrigated Wet Meadow	
V	9.40
W	22.23
Total:	**31.63**
Mixed Riparian, Scrub-Shrub/Wet Meadow	
X	3.80
Total:	**3.80**

Stream	Length (feet)
ESC 1	1,564
ESC 2	695
ESC 3	1,134
ESC 4	1,423
ESC 5	1,438
ESC 6	2,021
ESC 7	2,863
ESC 8	452
ESC 9	290
ESC 10	1,545
ESC 11	8,727
ESC 12	2,492
ESC 13	1,716
ESC 14	1,316
ESC 15	1,893
ESC 16	421
Total:	**29,990**
ISC 1	8,165
ISC 2	5,897
ISC 3	2,105
ISC 4	1,462
Total:	**17,629**
PSC 1	9,110
Total:	**9,110**

Waters	Area (Acres)
Reservoir	4.01

ESC = Ephemeral Stream Channel
ISC = Intermittent Stream Channel
PSC = Perennial Stream Channel

2012 Stream & Waters Delineation
- Ephemeral Stream Channel
- Intermittent Stream Channel
- Perennial Stream Channel, Kanab Creek
- Irrigation Reservoir

2012 Wetland Delineation
- Irrigated Wet Meadow
- Mixed Riparian, Scrub-Shrub/Wet Meadow
- Riparian Wet Meadow
- Project Area Boundary

Figure 4A. Wetland and Stream Channel Delineation, Index Map.

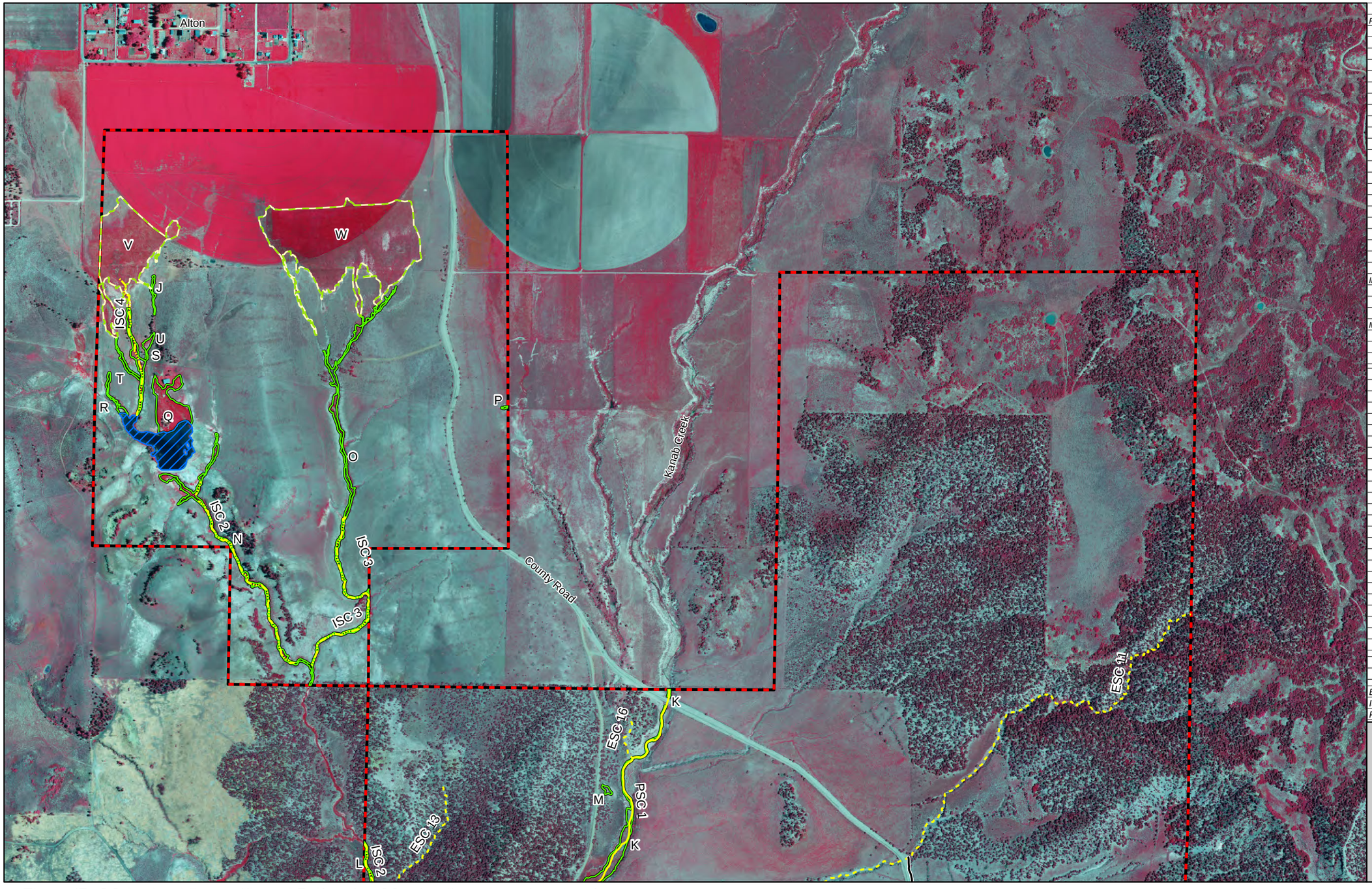
Map Date: July 31, 2012
Image Date: June 22, 2011

N

1 inch = 1,800 feet
0 1,000 2,000 4,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.



Wetland	Area (Acres)
Riparian Wet Meadow	
A	0.55
B	0.30
C	0.13
D	0.02
E	0.37
F	0.02
G	0.01
H	0.20
I	0.24
J	0.13
K	6.88
L	1.46
M	0.10
N	1.72
O	2.31
P	0.02
Q	2.57
R	0.26
S	0.80
T	0.22
U	0.23
Total:	**18.54**
Irrigated Wet Meadow	
V	9.40
W	22.23
Total:	**31.63**
Mixed Riparian, Scrub-Shrub/Wet Meadow	
X	3.80
Total:	**3.80**

Stream	Length (feet)
ESC 1	1,564
ESC 2	695
ESC 3	1,134
ESC 4	1,423
ESC 5	1,438
ESC 6	2,021
ESC 7	2,863
ESC 8	452
ESC 9	290
ESC 10	1,545
ESC 11	8,727
ESC 12	2,492
ESC 13	1,716
ESC 14	1,316
ESC 15	1,893
ESC 16	421
Total:	**29,990**
ISC 1	8,165
ISC 2	5,897
ISC 3	2,105
ISC 4	1,462
Total:	**17,629**
PSC 1	9,110
Total:	**9,110**

Waters	Area (Acres)
Reservoir	4.01

ESC = Ephemeral Stream Channel
ISC = Intermittent Stream Channel
PSC = Perennial Stream Channel

2012 Stream & Waters Delineation
- Ephemeral Stream Channel
- Intermittent Stream Channel
- Perennial Stream Channel, Kanab Creek
- Irrigation Reservoir

2012 Wetland Delineation
- Irrigated Wet Meadow
- Mixed Riparian, Scrub-Shrub/Wet Meadow
- Riparian Wet Meadow
- Project Area Boundary

Figure 4B. Wetland and Stream Channel Delineation, Map 1 of 3, north portion of project area.

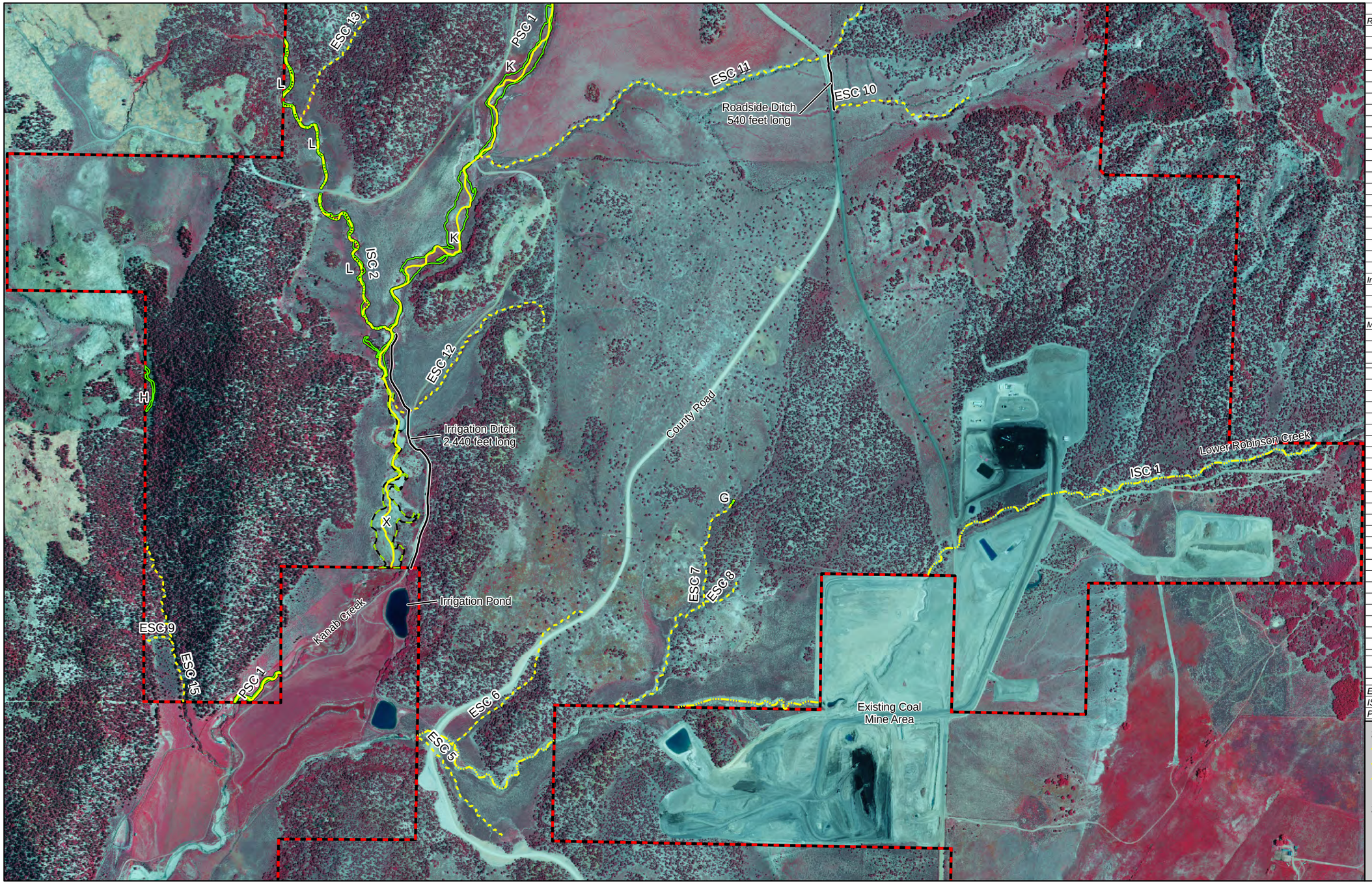
Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Map Date: July 31, 2012
Image Date: June 22, 2011

N

1 inch = 950 feet
0 500 1,000 2,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502



Wetland	Area (Acres)
Riparian Wet Meadow	
A	0.55
B	0.30
C	0.13
D	0.02
E	0.37
F	0.02
G	0.01
H	0.20
I	0.24
J	0.13
K	6.88
L	1.46
M	0.10
N	1.72
O	2.31
P	0.02
Q	2.57
R	0.26
S	0.80
T	0.22
U	0.23
Total:	**18.54**
Irrigated Wet Meadow	
V	9.40
W	22.23
Total:	**31.63**
Mixed Riparian, Scrub-Shrub/Wet Meadow	
X	3.80
Total:	**3.80**

Stream	Length (feet)
ESC 1	1,564
ESC 2	695
ESC 3	1,134
ESC 4	1,423
ESC 5	1,438
ESC 6	2,021
ESC 7	2,863
ESC 8	452
ESC 9	290
ESC 10	1,545
ESC 11	8,727
ESC 12	2,492
ESC 13	1,716
ESC 14	1,316
ESC 15	1,893
ESC 16	421
Total:	**29,990**
ISC 1	8,165
ISC 2	5,897
ISC 3	2,105
ISC 4	1,462
Total:	**17,629**
PSC 1	9,110
Total:	**9,110**

Waters	Area (Acres)
Reservoir	4.01

ESC = Ephemeral Stream Channel
ISC = Intermittent Stream Channel
PSC = Perennial Stream Channel

2012 Stream & Waters Delineation
- Ephemeral Stream Channel
- Intermittent Stream Channel
- Perennial Stream Channel, Kanab Creek
- Irrigation Reservoir

2012 Wetland Delineation
- Irrigated Wet Meadow
- Mixed Riparian, Scrub-Shrub/Wet Meadow
- Riparian Wet Meadow
- Project Area Boundary

Figure 4C. Wetland and Stream Channel Delineation, Map 2 of 3, central portion of project area.

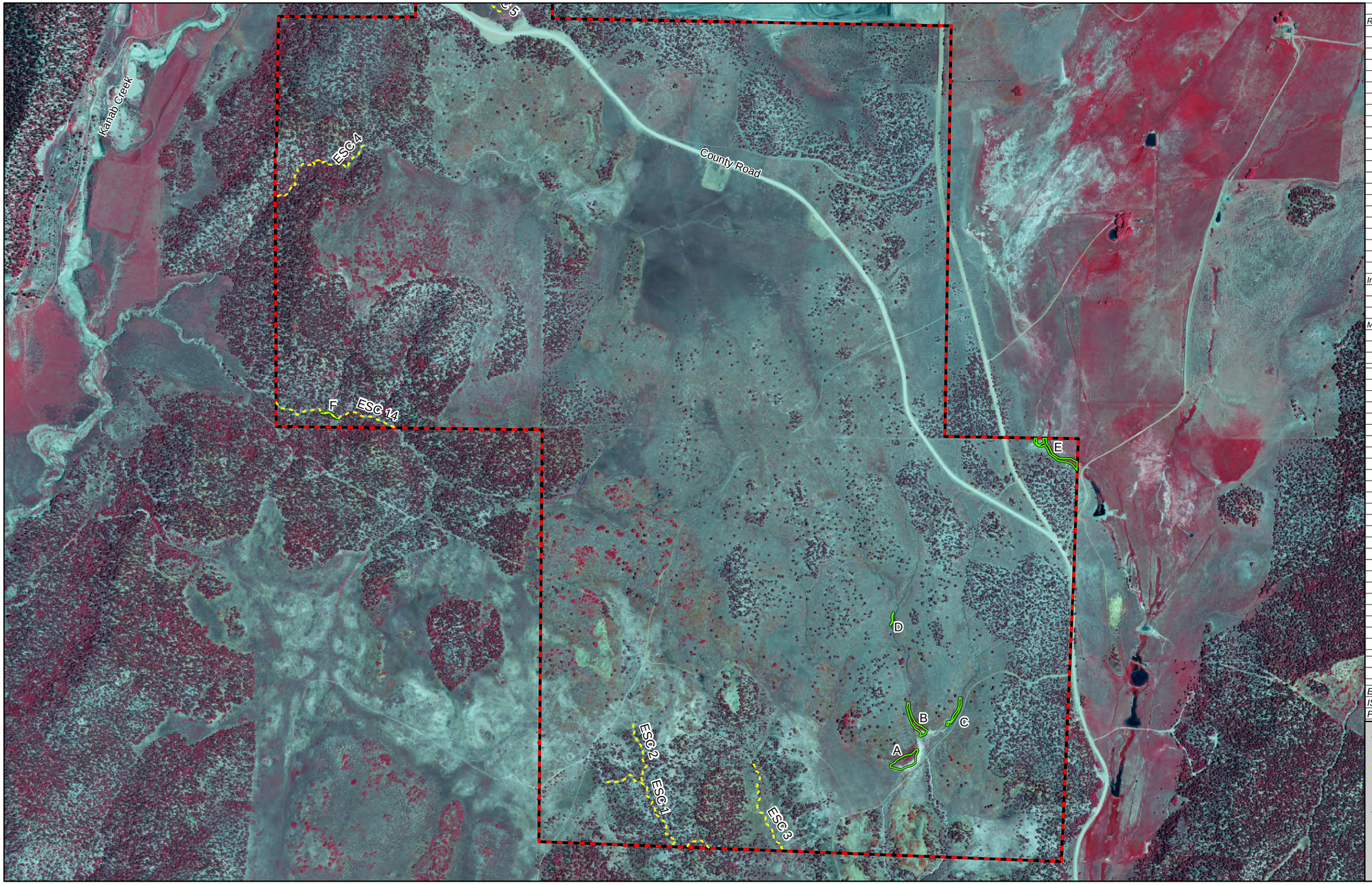
Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Map Date: July 31, 2012
Image Date: June 22, 2011

N

1 inch = 950 feet
0 500 1,000 2,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502



Wetland	Area (Acres)
Riparian Wet Meadow	
A	0.55
B	0.30
C	0.13
D	0.02
E	0.37
F	0.02
G	0.01
H	0.20
I	0.24
J	0.13
K	6.88
L	1.46
M	0.10
N	1.72
O	2.31
P	0.02
Q	2.57
R	0.26
S	0.80
T	0.22
U	0.23
Total:	**18.54**
Irrigated Wet Meadow	
V	9.40
W	22.23
Total:	**31.63**
Mixed Riparian, Scrub-Shrub/Wet Meadow	
X	3.80
Total:	**3.80**

Stream	Length (feet)
ESC 1	1,564
ESC 2	695
ESC 3	1,134
ESC 4	1,423
ESC 5	1,438
ESC 6	2,021
ESC 7	2,863
ESC 8	452
ESC 9	290
ESC 10	1,545
ESC 11	8,727
ESC 12	2,492
ESC 13	1,716
ESC 14	1,316
ESC 15	1,893
ESC 16	421
Total:	**29,990**
ISC 1	8,165
ISC 2	5,897
ISC 3	2,105
ISC 4	1,462
Total:	**17,629**
PSC 1	9,110
Total:	**9,110**

Waters	Area (Acres)
Reservoir	4.01

ESC = Ephemeral Stream Channel
ISC = Intermittent Stream Channel
PSC = Perennial Stream Channel

2012 Stream & Waters Delineation
- Ephemeral Stream Channel
- Intermittent Stream Channel
- Perennial Stream Channel, Kanab Creek
- Irrigation Reservoir

2012 Wetland Delineation
- Irrigated Wet Meadow
- Mixed Riparian, Scrub-Shrub/Wet Meadow
- Riparian Wet Meadow
- Project Area Boundary

Figure 4D. Wetland and Stream Channel Delineation, Map 3 of 3, south portion of project area.

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Map Date: July 31, 2012
Image Date: June 22, 2011

N

1 inch = 950 feet
0 500 1,000 2,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Table 2. Common plant species observed in the project area.

*Upland Plant Species	*Scientific Name	USACE Arid West Indicator Status
Alfalfa	*Medicago sativa*	UPL
Bindweed	*Convuluvus arvensis*	UPL
Big sagebrush	*Artemisia tridentata*	UPL
Black sagebrush	*Artemesia nova*	UPL
Blue gramma grass	*Bouteloua gracilis*	UPL
Broom snakeweed	*Gutierrezia sarothrae*	UPL
Cheatgrass	*Bromus tectorum*	UPL
Common snowberry	*Symphoricoarpos albus*	FACU
Common sunflower	*Helianthus annuus*	FACU
Creeping thistle	*Cirsium arvense*	FACU
Crested wheatgrass	*Agropyron cristatum*	UPL
Curly-cup gumweed	*Grindelia squarrosa*	FACU
Dandelion	*Taraxacum officinale*	FACU
Douglas' knotweed	*Polygonum douglasii*	FACU
Gambel's oak	*Quercus gambelii*	UPL
Great mullein	*Verbascum thapsis*	FACU
Hairy vetch	*Vicia villosa*	UPL
Intermediate wheatgrass	*Thinopyrum intermedium*	UPL
Kochia	*Kochia scoparia*	UPL
Lamb's-quarter	*Chenopodium album*	FACU
Lewis Flax	*Linum lewisii*	UPL
Orchardgrass	*Dactylis glomerata*	FACU
Pinyon pine	*Pinus edulis*	UPL
Prickly lettuce	*Lactuca serriola*	FACU
Rubber rabbitbrush	*Ericameria nauseosa*	UPL
Russian thistle	*Salsola tragus*	FACU
Sandberg bluegrass	*Poa secunda*	FACU
Scarlet gilia	*Ipomopsis aggregata*	UPL
Slender wheatgrass	*Elymus trachycaulus*	FACU
Smooth brome	*Bromus inermis*	FACU
Timothy	*Phleum pratense*	FACU
Utah juniper	*Juniperus osteosperma*	UPL
Western bottle-brush grass	*Elymus elymoides*	FACU
White clover	*Trifolium repens*	FACU
Woods' rose	*Rosa woodsii*	FACU
Yarrow	*Achillea millefolium*	FACU
Yellow rabbitbrush	*Chrysothamnus viscidiflorus*	UPL
Yellow salsify	*Tragopogon dubius*	UPL
Yellow sweetclover	*Melilotus officinalis*	FACU
***Wetland Plant Species**	***Scientific Name**	**USACE Arid West Indicator Status**
Alkali muhly	*Muhlenbergia asperifolia*	FACW
Arctic rush	*Juncus arcticus*	FACW
Cattail	*Typha latifolia*	OBL
Cocklebur	*Xanthium strumarium*	FAC
Common silverweed	*Argentina anserina*	OBL
Deer root	*Iva axillaris*	FAC
Field horsetail	*Equisetum arvense*	FAC
Field sedge	*Carex praegracilis*	FACW
Fowl bluegrass	*Poa palustris*	FAC

Foxtail barley	*Hordeum jubatum*	FAC
Fremont cottonwood	*Populus fremontii*	FACW
Kentucky bluegrass	*Poa pratensis*	FAC
Meadow barley	*Hordeum brachyantherum*	FACW
Mexican rush	*Juncus mexicanus*	FACW
Mint	*Mentha piperita*	FACW
Narrow-leaf willow	*Salix exigua*	FACW
Nebraska sedge	*Carex nebrascensis*	OBL
Red-woolly plantain	*Plantago eriopoda*	FACW
Rocky Mountain iris	*Iris missouriensis*	FACW
Seaside arrow-grass	*Triglochin maritima*	OBL
Salt grass	*Distichlis spicata*	FAC
Smallwing sedge	*Carex microptera*	FAC
Spike rush	*Eleocharis palustris*	OBL
Spreading bentgrass	*Agrostis stolonifera*	FACW
Tall scouring rush	*Equisetum hyemale*	FACW
Western American aster	*Symphyotrichum ascendens*	FAC
Western wheatgrass	*Pascopyrum smithii*	FAC
Yard knotweed	*Polygonum aviculare*	FACW

Indicator Category	Indicator Symbol	Definition
Obligate Wetland Plants	OBL	Plants that occur almost always (estimated probability >99 percent) in wetlands under natural conditions, but which may also occur rarely (estimated probability <1 percent in non-wetlands
Facultative Wetland Plants	FACW	Plants that occur usually (estimated probability >67 percent to 99 percent) in wetlands, but also occur (estimated probability 1 percent to 33 percent) in non-wetlands
Facultative	FAC	Plants with a similar likelihood (estimated probability 33 percent to 67 percent) of occurring in both wetlands and non-wetlands.
Facultative Upland Plants	FACU	Plants that occur sometimes (estimated probability 1 percent to <33 percent) in wetlands, but occur more often (estimated probability >67 percent to 99 percent) in non-wetlands.
Upland Plants	UPL	Plants that occur rarely (estimated probability <1 percent) in wetlands, but occur almost always (estimated probability >99 percent) in non-wetlands under natural conditions

*Common names and scientific names as per USACE 2012 Arid West Plants List.

4.1.1 Riparian Wet Meadow

A total of 18.54 acres of riparian wet meadow was delineated. Riparian wet meadows are typically found throughout the project area in topographically distinct drainage bottoms. The drainages may or may not have stream channels present. These are herbaceous plant communities lacking tree and shrub layers. They tend to be heavily grazed. Plant communities are dominated by graminoids. Common plant species include: arctic rush (*Juncus arcticus*), sedges (*Carex* spp.), spike rush (*Eleocharis palustris*), Kentucky bluegrass (*Poa pratensis*), saltgrass (*Distichlis spicata*), foxtail barley (*Hordeum jubatum*), Western wheatgrass (*Pascopyrum smithii*) and Rocky Mountain iris (*Iris missouriensis*). Spring runoff, surface drainage and a seasonally high water table appear to be the main sources of hydrology for these wetlands.

4.1.2 Irrigated Wet Meadow

A total of 31.63 acres irrigated wet meadow was delineated. These wetlands basically have the same plant community composition as the riparian wet meadow wetlands, but they do not occur in distinct drainages. Rather, these are slope wetlands found in association with drainage coming off irrigated alfalfa fields in the northwestern portion of the project area. The portions of these wet meadows that were situated inside livestock exclosure fences for the alfalfa fields were not heavily grazed. Irrigation return flows, natural surface drainage, and a seasonally high water table appear to be the main sources of hydrology for these wetlands.

4.1.3 Mixed Riparian, Scrub-Shrub/Wet Meadow

A total of 3.80 acres of mixed riparian, scrub-shrub/wet meadow was delineated. This wetland type was only identified along the south reach of Kanab Creek. The creek's active floodplain in this reach is comprised chiefly of cobble, gravel and sand. These alluvial substrates have sparse amounts of soil present in scattered small depositional pockets and abandoned channel meanders. The cobble/gravel/sand areas are dominated by a scrub-shrub layer of narrow-leaf willow (*Salix exigua*), and the smaller depositional pockets and abandoned channel meanders are typically vegetated with herbaceous wet meadow species, including: artic rush, sedges, spike rush, and field horsetail (*Equisetum arvense*). Seasonal flooding and near-surface groundwater associated with the alluvial aquifer appear to be the main sources of hydrology for these wetlands.

5.1 Streams and other Water Bodies

One perennial stream channel, four intermittent stream channels, 16 ephemeral stream channels, one irrigation reservoir and one irrigation ditch were delineated within the project area boundaries (Table 3) (Figures 4A-4D).

Table 3. Stream channels and water bodies delineated within the project area.

Ephemeral Stream	Length (feet)	Intermittent Stream	Length (feet)	*Perennial Stream*	*Length (feet)*	Irrigation Ditch	Length (feet)	Irrigation Reservoir	Area (acres)
ESC 1	1,564	ISC 1	8,165	PSC 1	9,110	Ditch 1	2,440	Reservoir 1	4.01
ESC 2	695	ISC 2	5,897	**Total:**	**9,110 ft**	**Total:**	**2,440 ft**	**Total:**	**4.01 ac**
ESC 3	1,134	ISC 3	2,105						
ESC 4	1,423	ISC 4	1,462						
ESC 5	1,438	**Total:**	**17,629 ft**						
ESC 6	2,021								
ESC 7	2,863								
ESC 8	452								
ESC 9	290								
ESC 10	1,545								
ESC 11	8,727								
ESC 12	2,492								
ESC 13	1,716								
ESC 14	1,316								
ESC 15	1,893								
ESC 16	421								
Total:	**29,990 ft**								

A summary table is provided with the stream channel delineations maps in Appendix C. For each delineated stream channel, the summary table identifies the OHWM data sheet(s) in Appendix D that corresponds to the stream channel delineation; width of the stream channel's OHWM; and the length and acreage of the stream channel that was delineated in the project area. Where stream channels flow through delineated wetlands, the delineated wetland acreage does not included the delineated stream channel acreage.

5.1.1 Perennial Stream Channels

Kanab Creek is the only perennial stream channel within the project area. It is identified as PSC 1 on the delineation maps (Figure 4A). Approximately 9,110 linear feet of the stream channel flows southward across the central portion the project area. The OHWM of the active stream channel varies from about 4- to 9-feet wide depending on the valley bottom slope gradient and channel sinuoisty. Within the project area, the majority of the stream channel is bordered by riparian wet meadow, except for the southern-most channel segment, which is bordered by mixed riparian, scrub-shrub/wet meadow wetland (Figure 4A). Kanab Creek eventually drains into the Colorado River approximately 70 miles south of the project area.

5.1.2 Intermittent Stream Channels

Four intermittent stream channels were delineated within the project area, totaling approximately 17,629 linear feet in channel length (Table 3). These are single thread channels. All of the intermittent stream channels have drainage connections to Kanab Creek. All of the intermittent channels had some amount of flow when the spring 2012 delineation fieldwork was completed.

The largest is Lower Robinson Creek, which enters the project area from the east, flows westward across the center portion of the project area, and drains into Kanab Creek west of the project area boundary. Lower Robinson Creek is identified as ISC 1 on the delineation maps (Figure 4A). The creek has a wide, but shallow stream channel. The active floodplain has less than 5 percent vegetative cover (see Photos 44 and 45, Appendix E). According to the USACE's delineation procedures, the OHWM of the stream channel corresponds with the dimensions of the active floodplain, which is generally 6- to 8-feet wide and 1 foot-deep. The low-flow channel within the active floodplain is generally 1- to 3-feet wide and less than 0.5-feet deep. Within the project area, no wetlands were delineated in association with the active floodplain of Lower Robinson Creek.

A portion of Lower Robinson Creek flows through the existing coal mine, which is located on private land outside of the project area boundaries (Figure 4C). The existing coal mine obtained a Clean Water Act Section 404 permit from the USACE in October 2010 (USACE# SPK-2009-01008) to temporarily impact a total of 2,440 feet of Lower Robinson Creek for the temporary relocation of the stream channel for coal recovery, and the installation of two temporary road crossings. The two temporary road crossings area situated within the Alton Coal Tract LBA project area boundaries, whereas the temporary channel relocation is situated outside the project area boundaries.

Three unnamed intermittent stream channels were delineated in the northwestern portion of the project area. They are identified as ISC 2, ISC 3 and ISC 4 on the delineation maps (Figure 4A).

All of these streams have very similar channel geomorphology. They are situated in topographically distinct drainages that receive natural runoff and groundwater accretion, irrigation return flows from the alfalfa fields and/or seepage from the irrigation reservoir. The active floodplains are vegetated with riparian wet meadow wetlands. Stream channels are incised about 1- to 2-feet lower than the active floodplain. The OHWMs of the active stream channels are 1- to 3-feet wide, and typically correspond to the low-flow channel width due to channel incision (see Photos 46-49, Appendix E). Within the project area, the active floodplains of these intermittent stream channels are typically vegetated with riparian wet meadow wetlands.

5.1.3 Ephemeral Stream Channels

Sixteen unnamed ephemeral stream channels were delineated within the project area, totaling approximately 29,990 linear feet in channel length (Figure 4A). These are single thread channels. All of the ephemeral stream channels appear to have drainage connections to Kanab Creek. None of these stream channels had flow when the spring 2012 delineation fieldwork was conducted.

The ephemeral stream channels are also situated in topographically distinct drainages; however, channel geomorphology is variable. Most of the ephemeral streams have wide but very shallow channels with minimal indicators of an OHWM. According to the USACE's delineation procedures, the OHWMs of these ephemeral channels correspond with the dimensions of the active floodplains, which range between 3- to 8-feet wide and less than 1 foot deep. Low-flow channels within the active floodplain are typically 1-foot wide and less than 0.5 feet deep. Ephemeral streams 2 and 3 are typical examples of this type of ephemeral channel geomorphology (see Photos 28 and 29, Appendix E).

Several of the ephemeral stream channels are situated in deeply incised U- or V-shaped drainages where the widths of the active floodplain and low-flow channel are essentially confined within the width of the active stream channel. In these situations, the OHWM is typically 2- to 3-feet wide and less than 1 foot deep. Ephemeral streams 8 and 10 are typical examples of this type of ephemeral channel geomorphology (see Photos 34 and 36, Appendix E).

Flow diversion was observed on one of the ephemeral stream channels. Surface drainage in ESC 10 is diverted into an approximately 540-foot long road ditch that runs along the east side of the County Road (Figure 4C). This is because there is no culvert where ESC 10 intersects the road. The road ditch conveys the surface drainage northward to a culvert at the ESC 11 road crossing. At this point, ESC 11 conveys the combined drainage of both ephemeral stream channels through the road culvert and westward to Kanab Creek (PSC 1).

5.1.4 Irrigation Reservoir

One irrigation reservoir covering approximately 4.01 acres of open water was delineated in the northwest corner of the project area. This is a man-made reservoir with an earthen dam that was constructed on the upper portion of intermittent stream channel 2 (Figure 4B). This is a deep-water reservoir. Most of the shoreline has steep banks with no fringing wetlands, except for the east arm. The east arm appears to impound a shallow drainage that contains approximately 2.57 acres of riparian wetland labeled as wetland Q on the delineation maps (Figure 4B). The west

arm of the reservoir is fed by intermittent stream channel 4 and a small riparian wet meadow drainage, labeled as wetland R on the delineation maps (Figure 4B).

5.1.5 Irrigation Ditch

Approximately 2,440 feet of irrigation ditch was delineated in the project area (Figure 4C). The ditch is fed by a diversion dam that was built on the Kanab Creek stream channel. It appears that the majority of the creek flow is diverted into the irrigation ditch. The ditch flows southward through semi-desert uplands, crosses ephemeral stream channel 12, and discharges into an irrigation holding pond located outside the project area boundary. The pond appears to be used to irrigate meadows that border Kanab Creek. The ditch is about 3-feet wide. Cattail (*Typha latifolia*), sedges and artic rush were growing in the ditch, although it appears that the ditch is periodically cleaned to maintain irrigation conveyance efficiency.

6.0 SUMMARY

The approximately 5,281-acre Alton Coal Tract LBA project area was delineated for wetlands, stream channels and other water bodies by Frontier Corporation USA in the spring of 2012. The work was conducted following current U.S. Army Corps of Engineers delineation procedures and protocols.

A total of 24 individual wetland areas, totaling approximately 53.97 acres in size, were delineated within the project area boundaries (Table 1). The delineated wetlands were classified into three habitat types. Approximately 18.54 acres were classified as riparian wet meadow wetlands, 31.63 acres were classified as irrigated wet meadow wetlands, and 3.80 acres were classified as mixed riparian scrub-shrub/wet meadow wetlands (Figures 4A-4D).

One perennial stream channel, four intermittent stream channels, 16 ephemeral stream channels, one irrigation reservoir and one irrigation ditch were also delineated within the project area boundaries (Table 3) (Figures 4A-4D). Kanab Creek is the only perennial stream channel that was delineated. Approximately 9,110 linear feet of Kanab Creek flows southward across the central portion of the project area. Kanab Creek eventually drains into the Colorado River approximately 70 miles south of the project area.

Four intermittent stream channels were delineated within the project area, totaling approximately 17,629 linear feet in channel length (Table 3) (Figures 4A-4D). These are single thread channels. All of the intermittent stream channels have drainage connections to Kanab Creek. All of the intermittent channels had some amount of flow when the spring 2012 delineation fieldwork was completed. The largest of the intermittent streams is Lower Robinson Creek. No wetlands were delineated in association with the active floodplain of Lower Robinson Creek. The three other unnamed intermittent streams have channels that are deeply incised within the actives floodplains that are typically vegetated with riparian wet meadow wetlands.

Sixteen unnamed ephemeral stream channels were delineated within the project area, totaling approximately 29,990 linear feet in channel length (Table 3) (Figure 4A). These are single thread channels. All of the ephemeral stream channels appear to have drainage connections to

Kanab Creek. None of these stream channels had flow when the spring 2012 delineation fieldwork was conducted, and most of these stream channels had minimal indicators of an OHWM. Flow diversion was observed on one of the ephemeral stream channels. Surface drainage in ESC 10 is diverted into an approximately 540-foot long road ditch that drains into ESC 11 (Figure 4C). This is because there is no culvert where ESC 10 intersects the County Road.

One irrigation reservoir covering approximately 4.01 acres of open water was delineated in the northwest corner of the project area. This is a man-made reservoir with an earthen dam that was constructed on the upper portion of intermittent stream channel 2 (Figure 4B).

Approximately 2,440 feet of irrigation ditch was delineated in the project area (Figure 4C). The ditch is fed by a diversion dam that was built on the Kanab Creek stream channel. It appears that the majority of the creek flow is diverted into the irrigation ditch. The ditch flows southward through semi-desert uplands, crosses ephemeral stream channel 12, and discharges into an irrigation holding pond located outside the project area boundary.

7.0 REFERENCES CITED

Munsell. 2000. *Munsell Soil Color Charts*. Munsell Color, Grand Rapids, MI. 10pp. plus 9 charts.

U.S. Army Corps of Engineers (USACE). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). ERDC/EL TR-08-28.* Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE. 2010. *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. ERDC/CRREL TN-10-1*. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE. 2012. *Arid West Final Draft Ratings*. U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory (CRREL). Obtained online at: http://www.spk.usace.army.mil/Portals/12/documents/regulatory/pdf/AW_Region_Draft_Final.pdf

U.S. Department of Agriculture Natural Resources Conservation Service (USDA-NRCS). 2012. *USDA-NRCS Plants Database*. http://plants.usda.gov. Accessed May-July 2012.

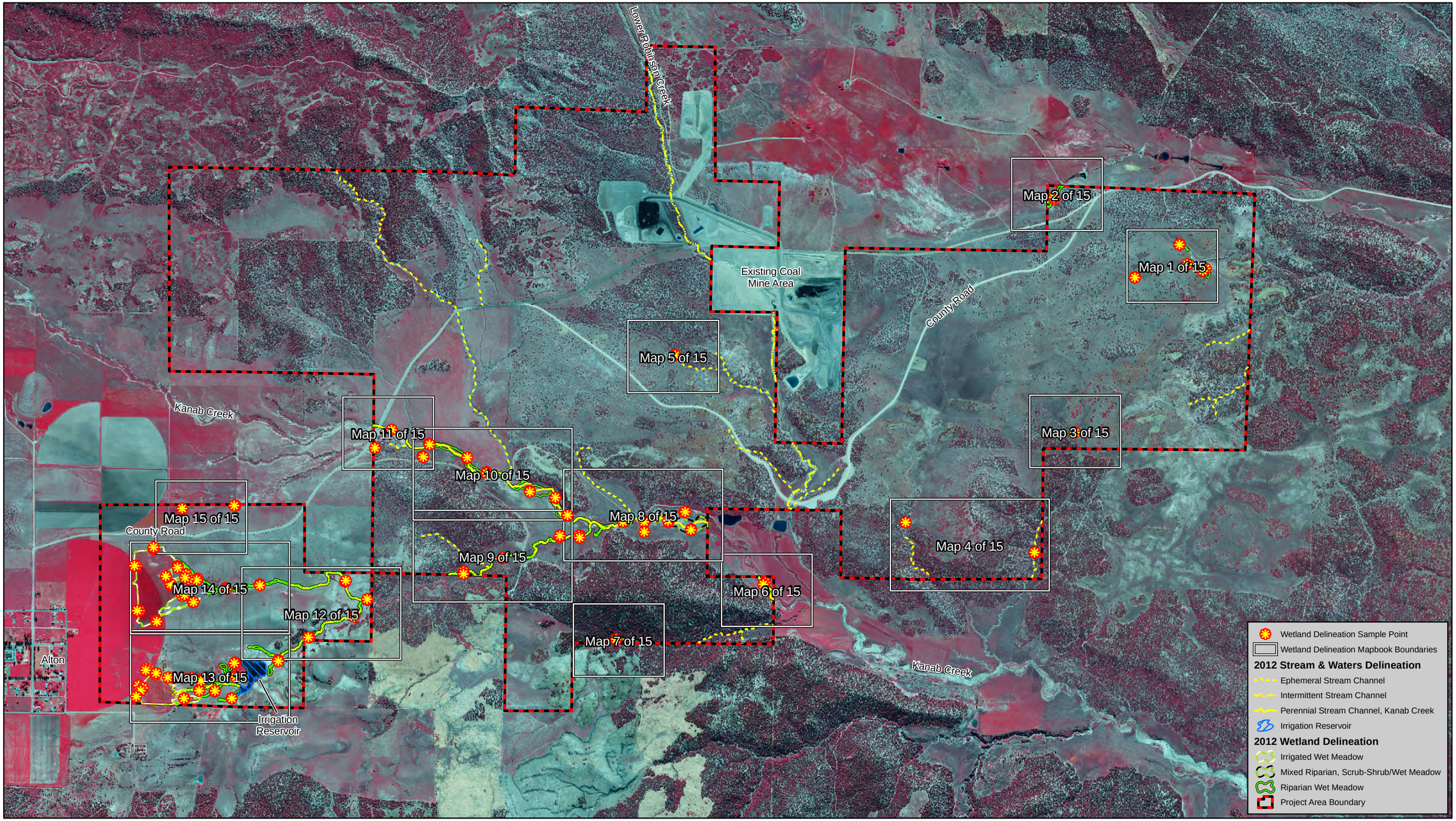
Utah Automated Geographic Reference Center (Utah AGRC). 2012. *Utah GIS Portal.* Map and aerial imagery data obtained online at: http://gis.utah.gov.

Welsh, S.L, N.D Atwood, S. Goodrich and L. C. Higgins. 2003. *A Utah Flora*. Third Edition, revised. Brigham Young University Print Services. Provo, UT.

Whitson, Tom D., Larry C. Burrill, Steven A. Dewey, David W. Cudney, B.E. Nelson, Richard D. Lee, and Robert Parker. Whitson, Tom D. (ed.) 2006. *Weeds of the West*. 9th ed. Laramie: University of Wyoming. ISBN: 0-941570-13-4.

APPENDIX A

Wetland Delineation Maps



Appendix A. Wetland Delineation Index Map.

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

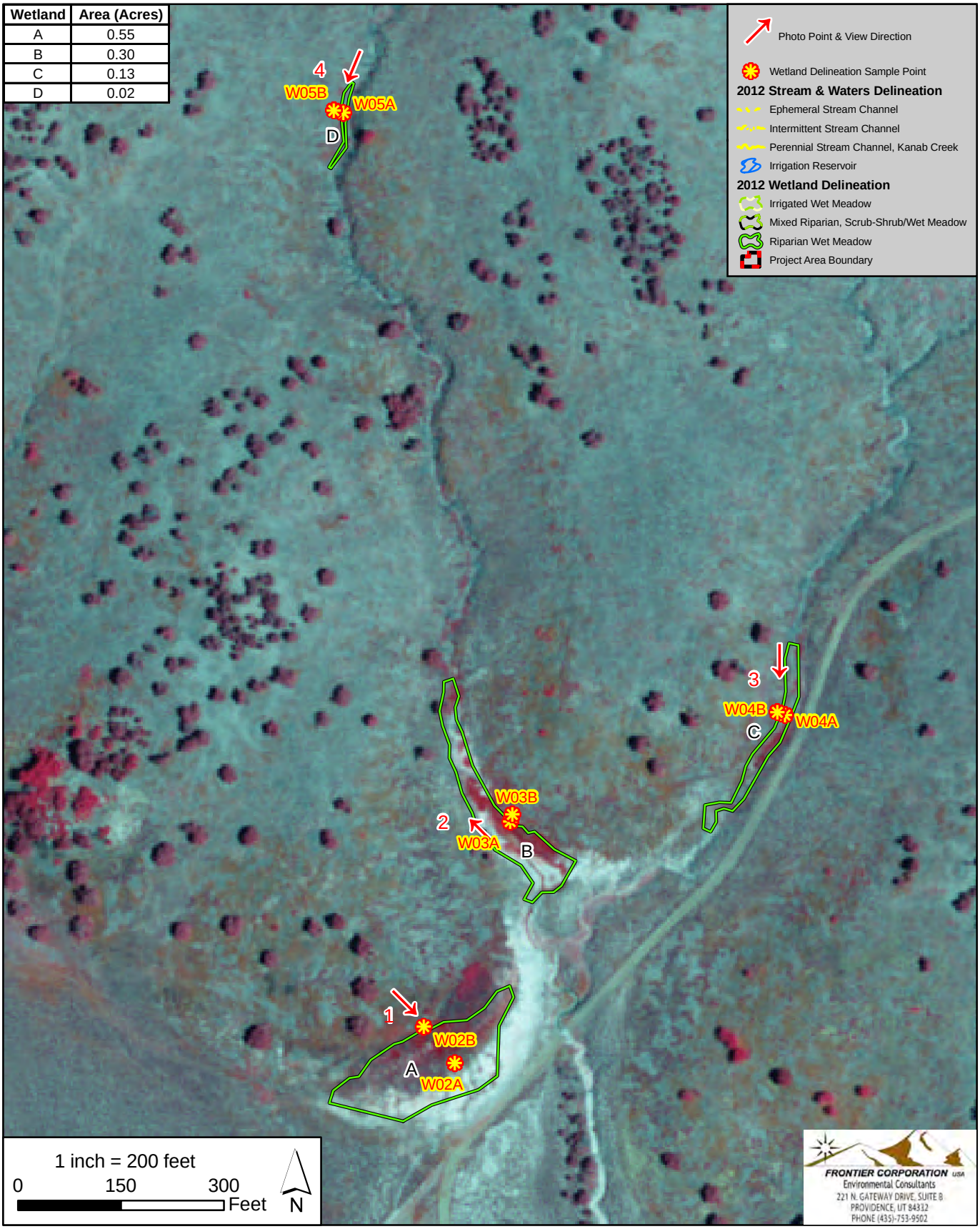
Map Date: July 2, 2012
Image Date: June 22, 2011

N

1 inch = 1,800 feet

0 1,000 2,000 4,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

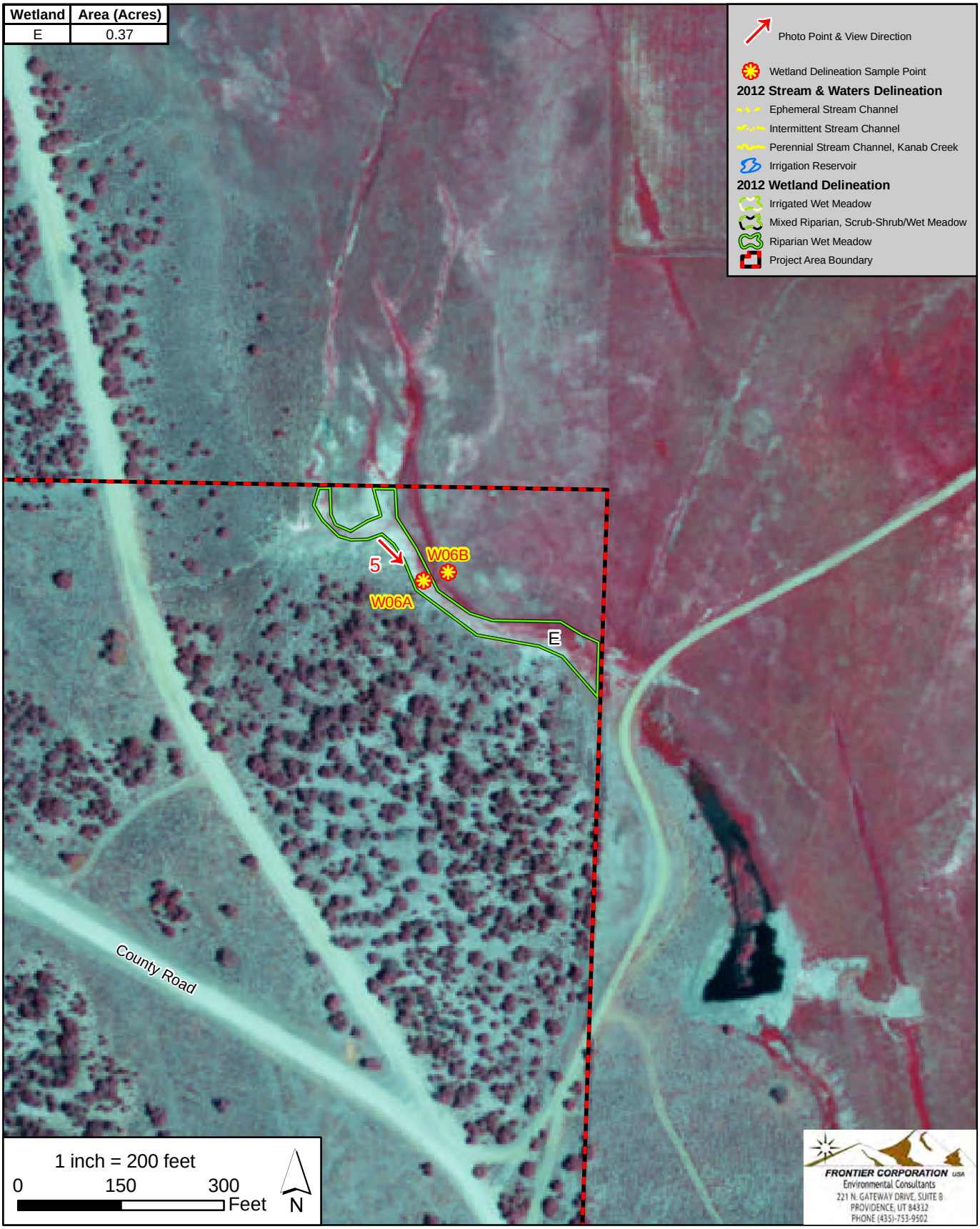


Wetland	Area (Acres)
A	0.55
B	0.30
C	0.13
D	0.02

Appendix A. Wetland Delineation, Map 1 of 15.

Map Date: July 2, 2012
Image Date: June 22, 2011

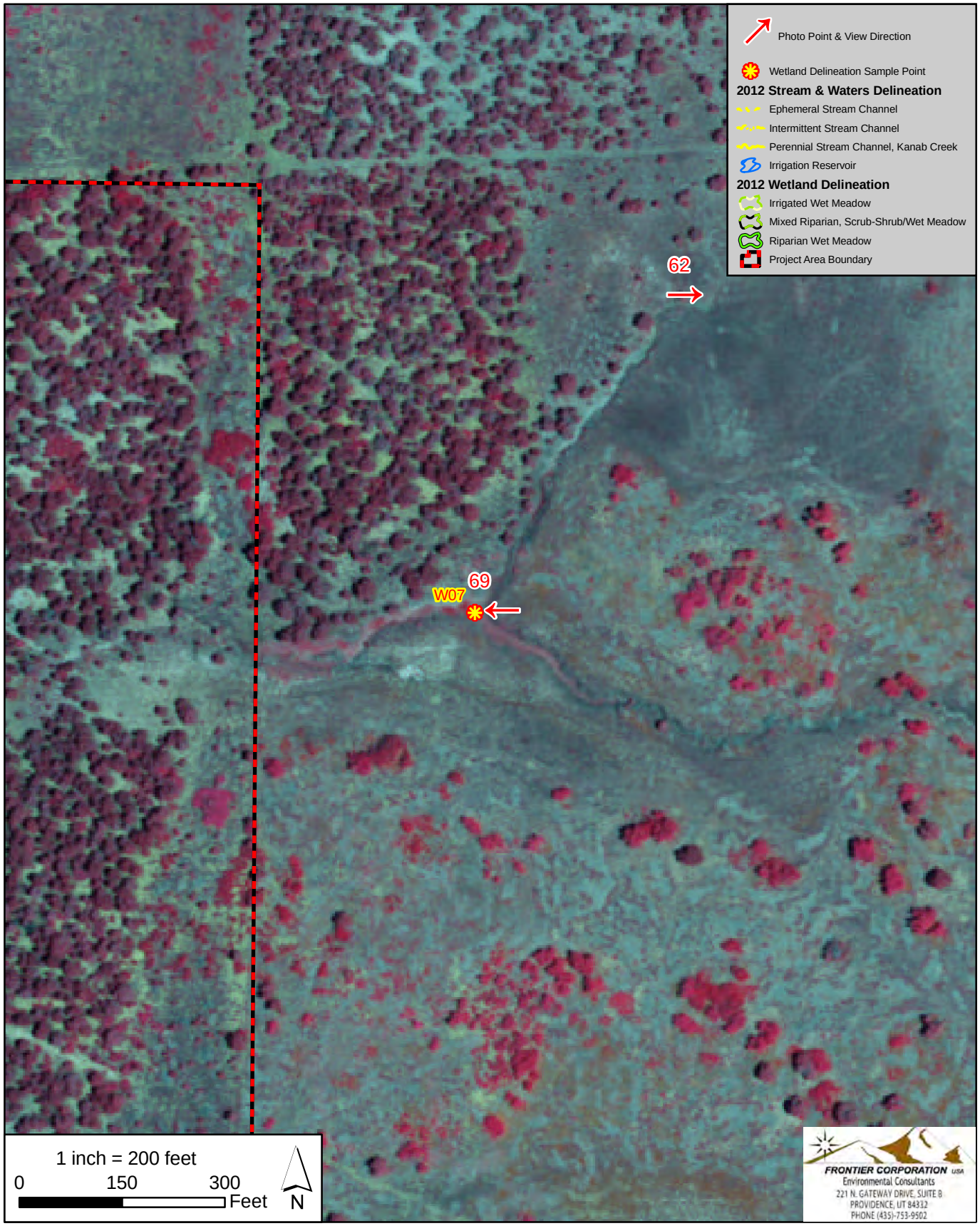
Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.



Appendix A. Wetland Delineation, Map 2 of 15.

Map Date: July 2, 2012
Image Date: June 22, 2011

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

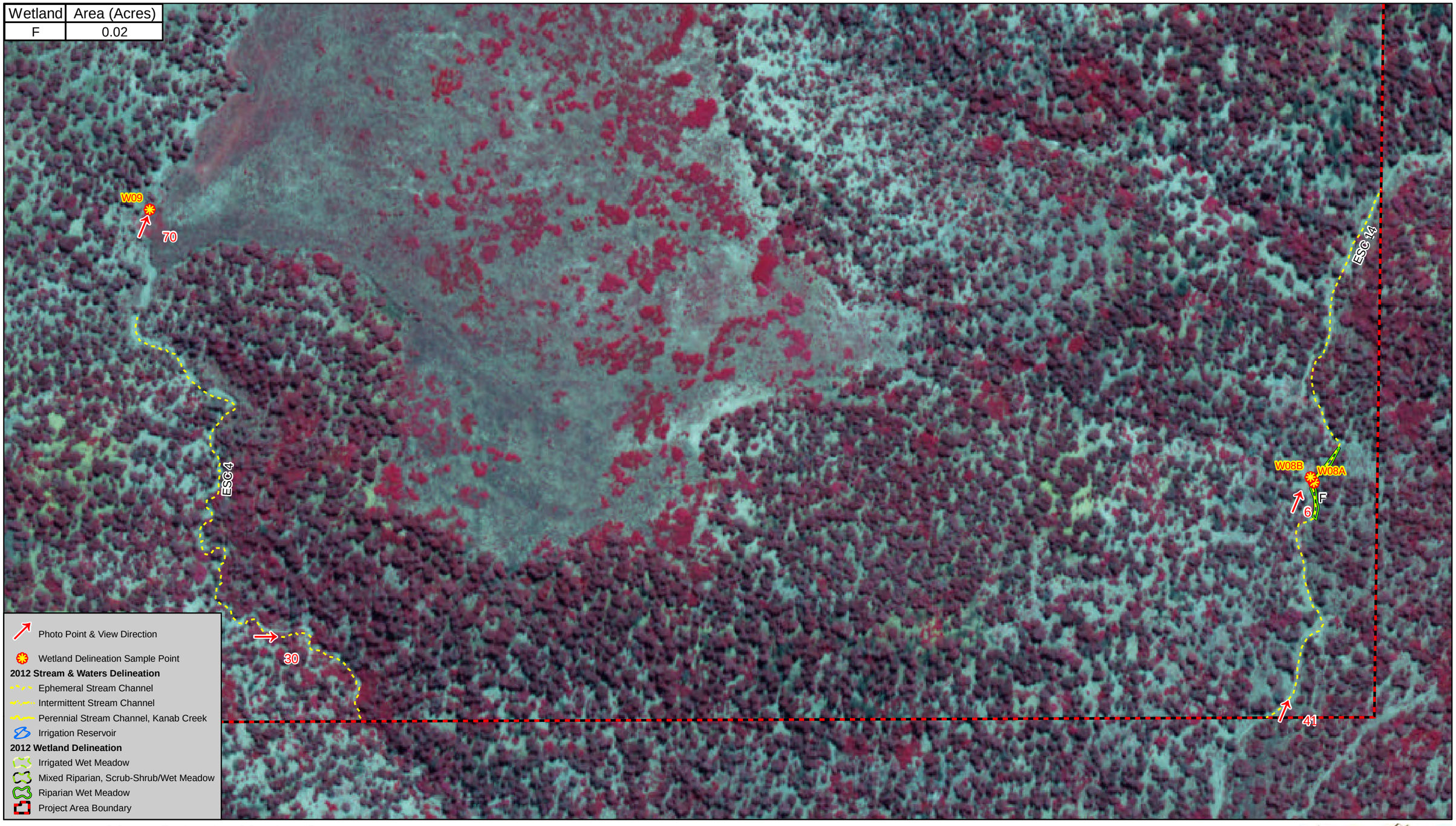


Appendix A. Wetland Delineation, Map 3 of 15.

Map Date: July 2, 2012
Image Date: June 22, 2011

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Wetland	Area (Acres)
F	0.02



Appendix A. Wetland Delineation, Map 4 of 15.

Map Date: July 31, 2012
Image Date: June 22, 2011

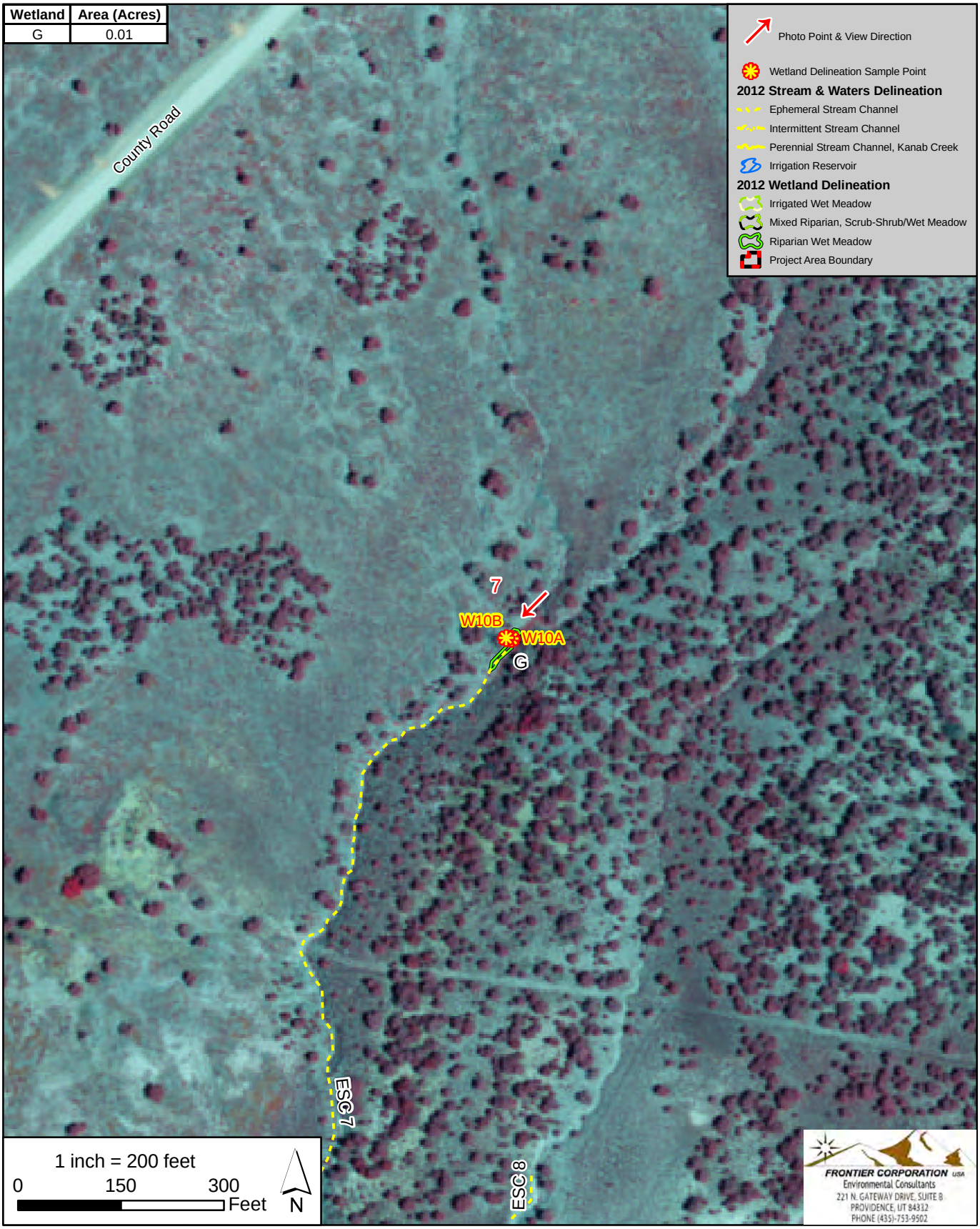
N

1 inch = 200 feet

0 100 200 400 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

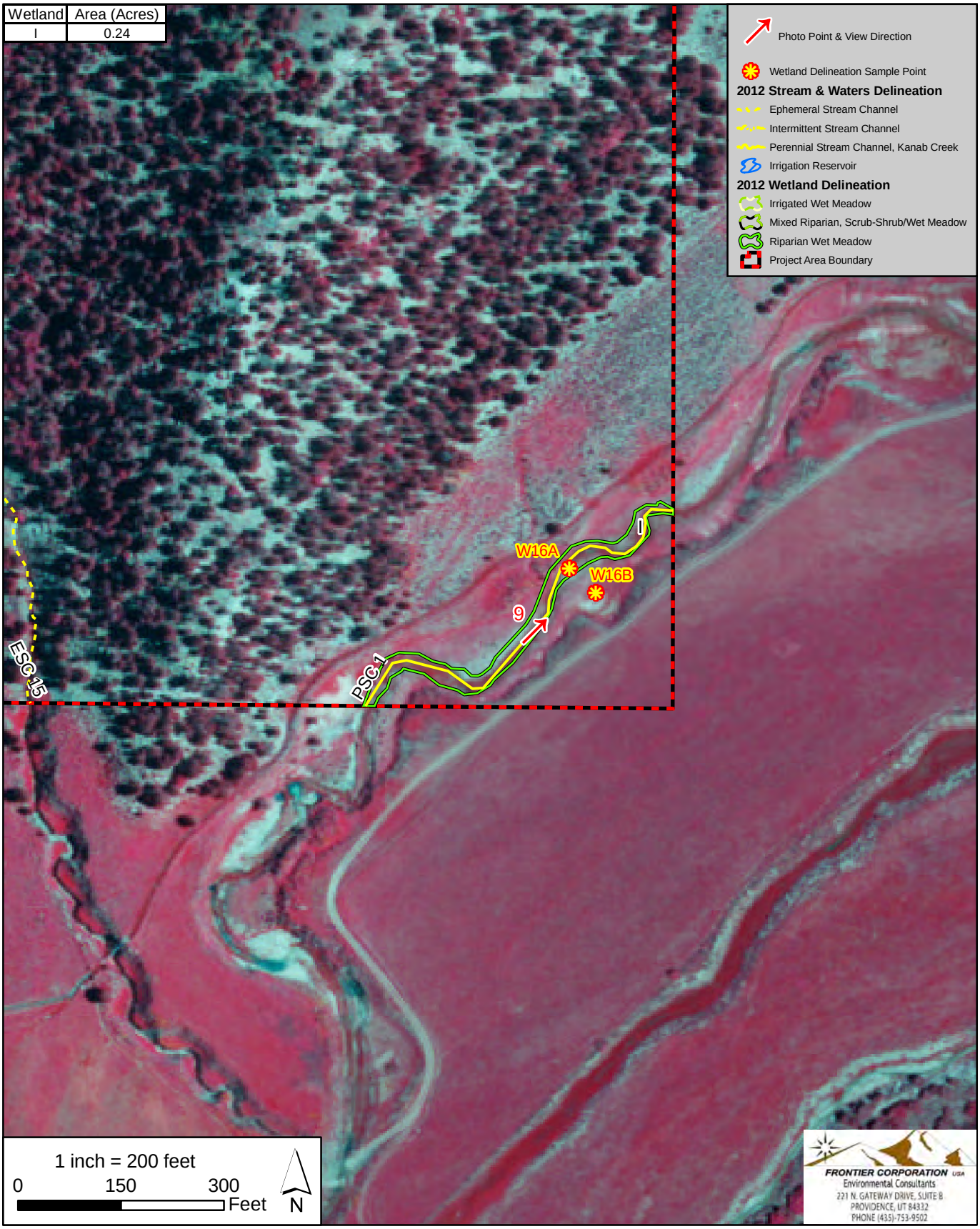
Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.



Appendix A. Wetland Delineation, Map 5 of 15.

Map Date: July 2, 2012
Image Date: June 22, 2011

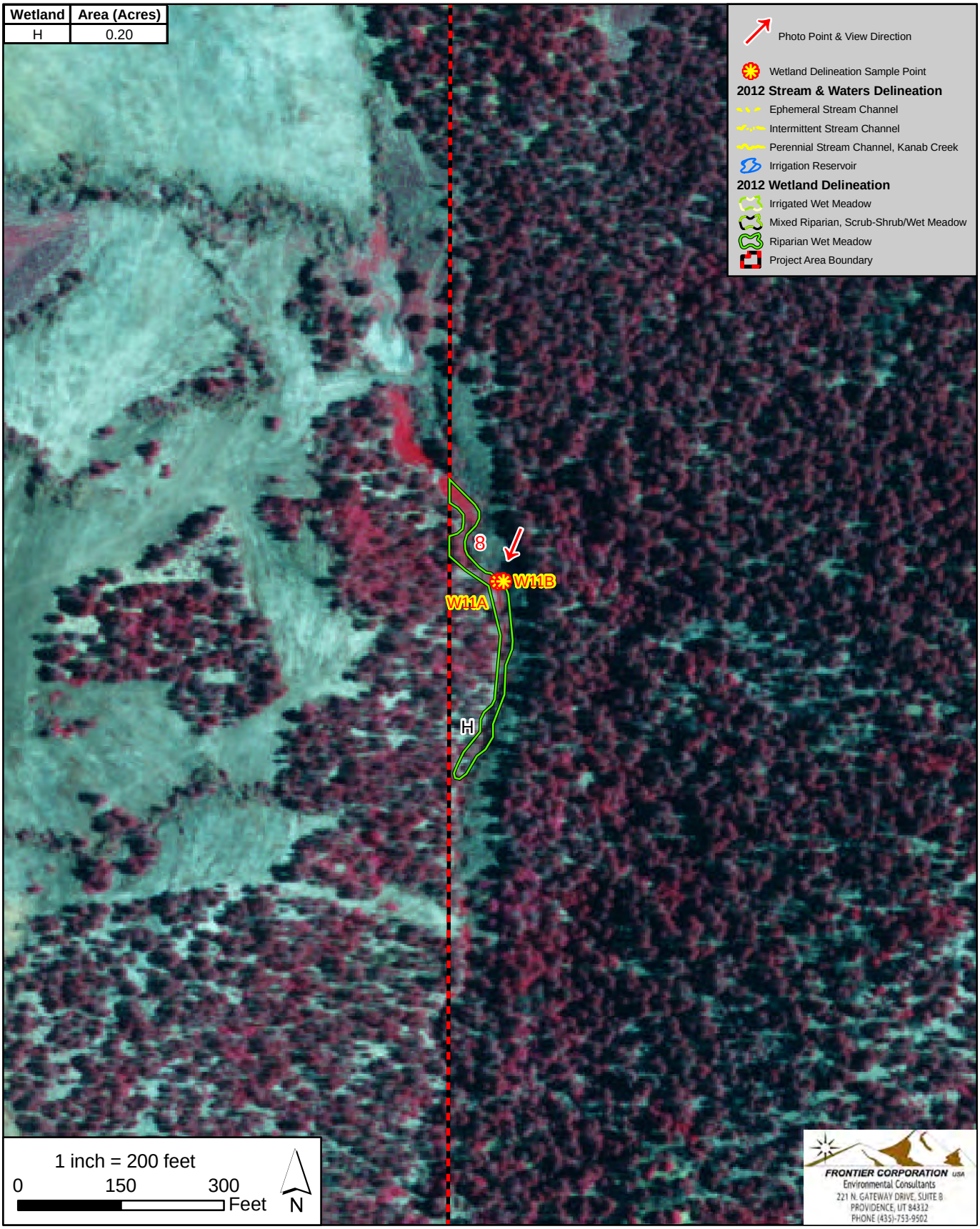
Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.



Appendix A. Wetland Delineation, Map 6 of 15.

Map Date: July 31, 2012
Image Date: June 22, 2011

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.



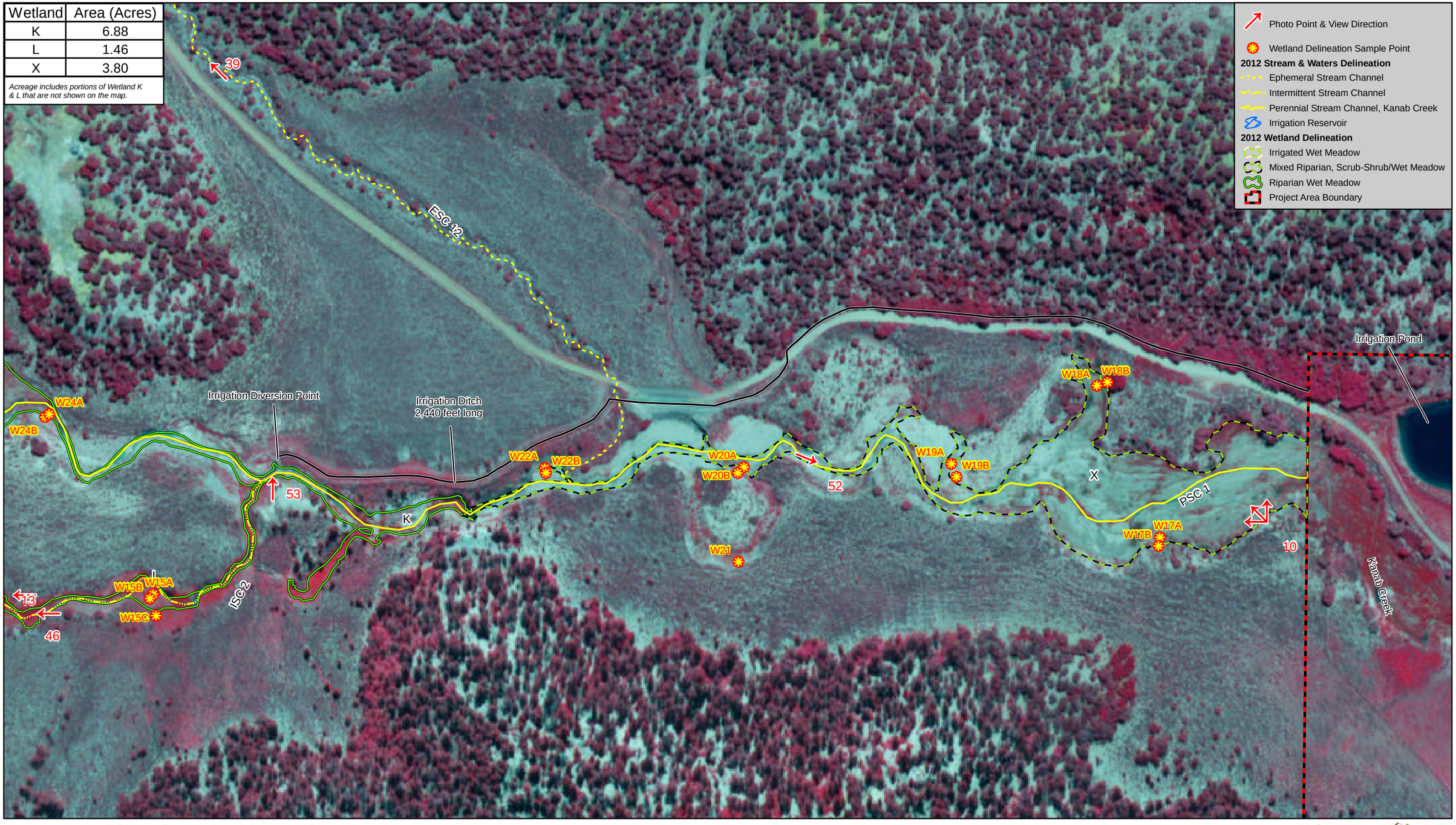
Appendix A. Wetland Delineation, Map 7 of 15.

Map Date: July 2, 2012
Image Date: June 22, 2011

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Wetland	Area (Acres)
K	6.88
L	1.46
X	3.80

Acreage includes portions of Wetland K & L that are not shown on the map.



Appendix A. Wetland Delineation, Map 8 of 15.

Map Date: July 31, 2012
Image Date: June 22, 2011

N

1 inch = 200 feet

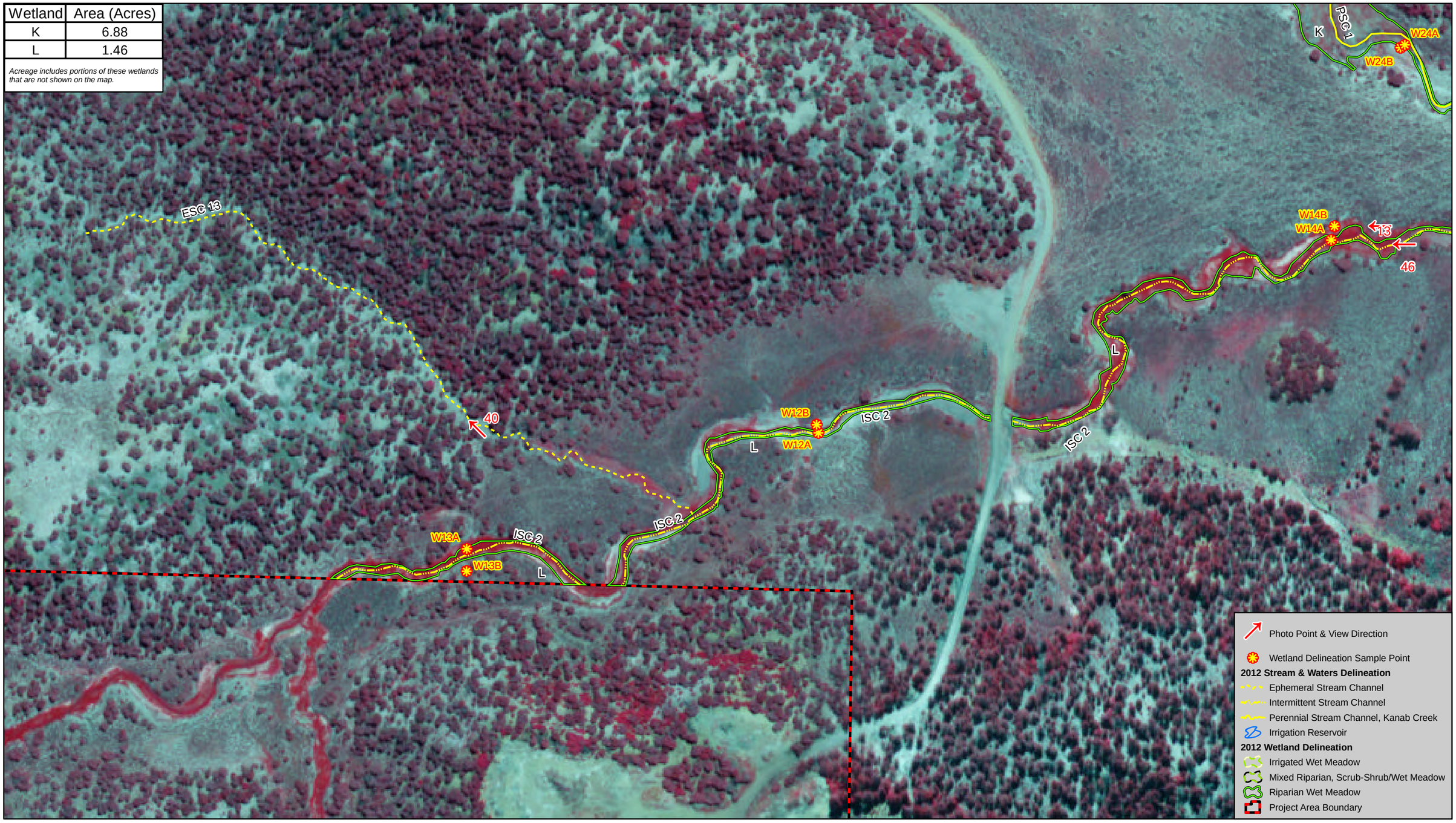
0 100 200 400 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Wetland	Area (Acres)
K	6.88
L	1.46

Acreage includes portions of these wetlands that are not shown on the map.



Appendix A. Wetland Delineation, Map 9 of 15.

Map Date: July 31, 2012
Image Date: June 22, 2011

N

1 inch = 200 feet

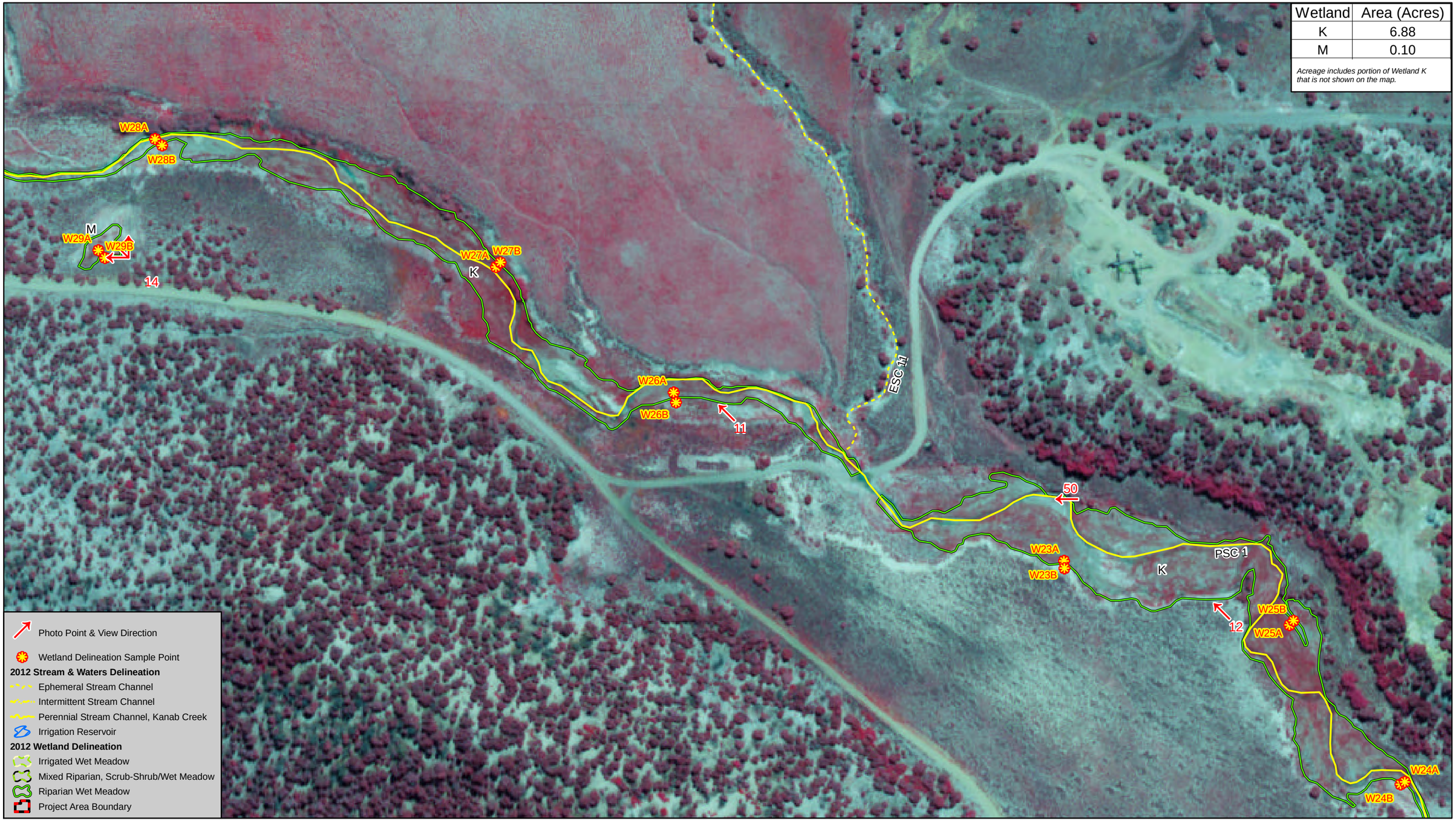
0 100 200 400 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Wetland	Area (Acres)
K	6.88
M	0.10

Acreage includes portion of Wetland K that is not shown on the map.



Appendix A. Wetland Delineation, Map 10 of 15.

Map Date: July 31, 2012
Image Date: June 22, 2011

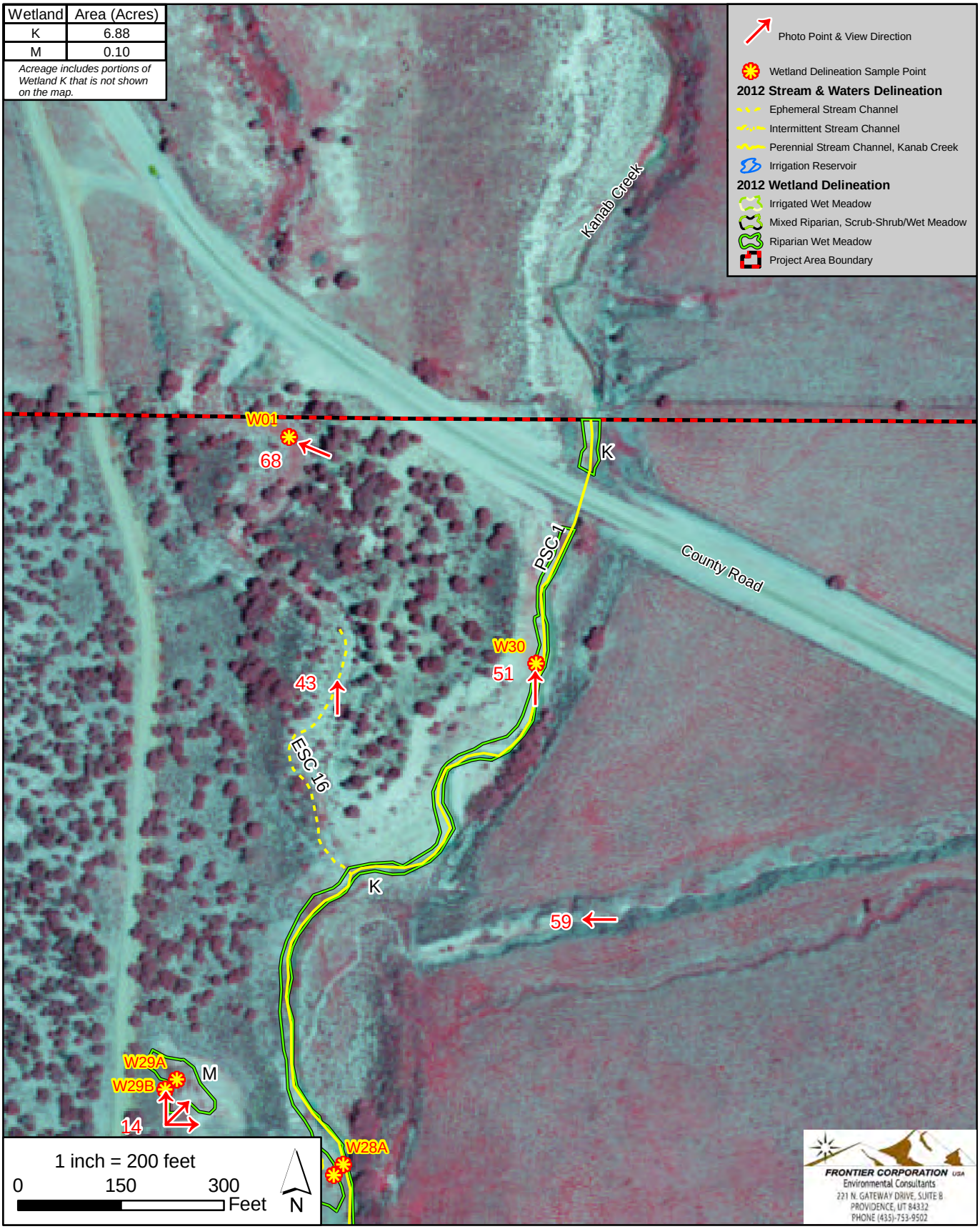
N

1 inch = 200 feet

0 100 200 400 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.



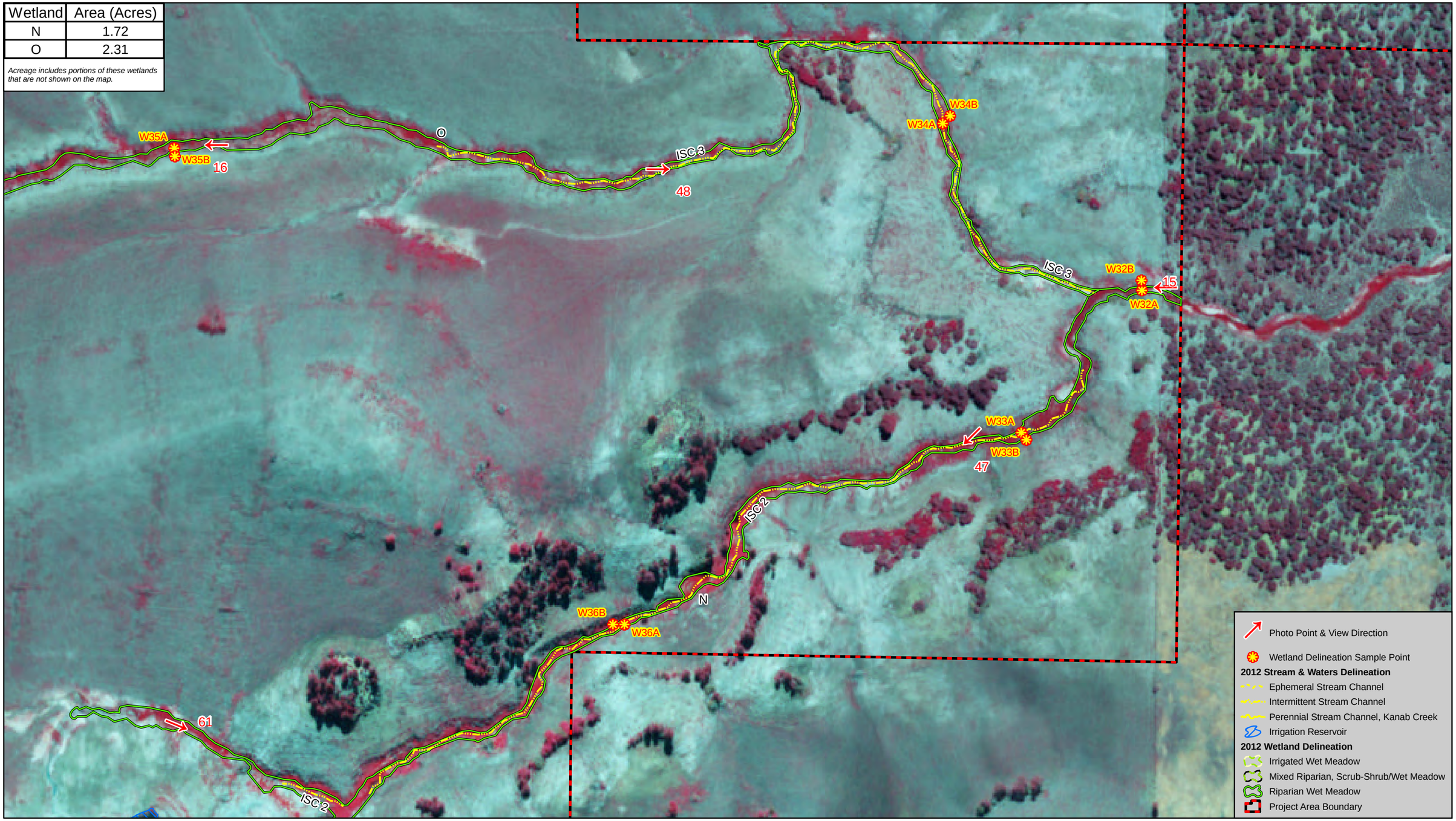
Appendix A. Wetland Delineation, Map 11 of 15.

Map Date: July 31, 2012
Image Date: June 22, 2011

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Wetland	Area (Acres)
N	1.72
O	2.31

Acreage includes portions of these wetlands that are not shown on the map.



Appendix A. Wetland Delineation, Map 12 of 15.

Map Date: July 31, 2012
Image Date: June 22, 2011

N

1 inch = 200 feet

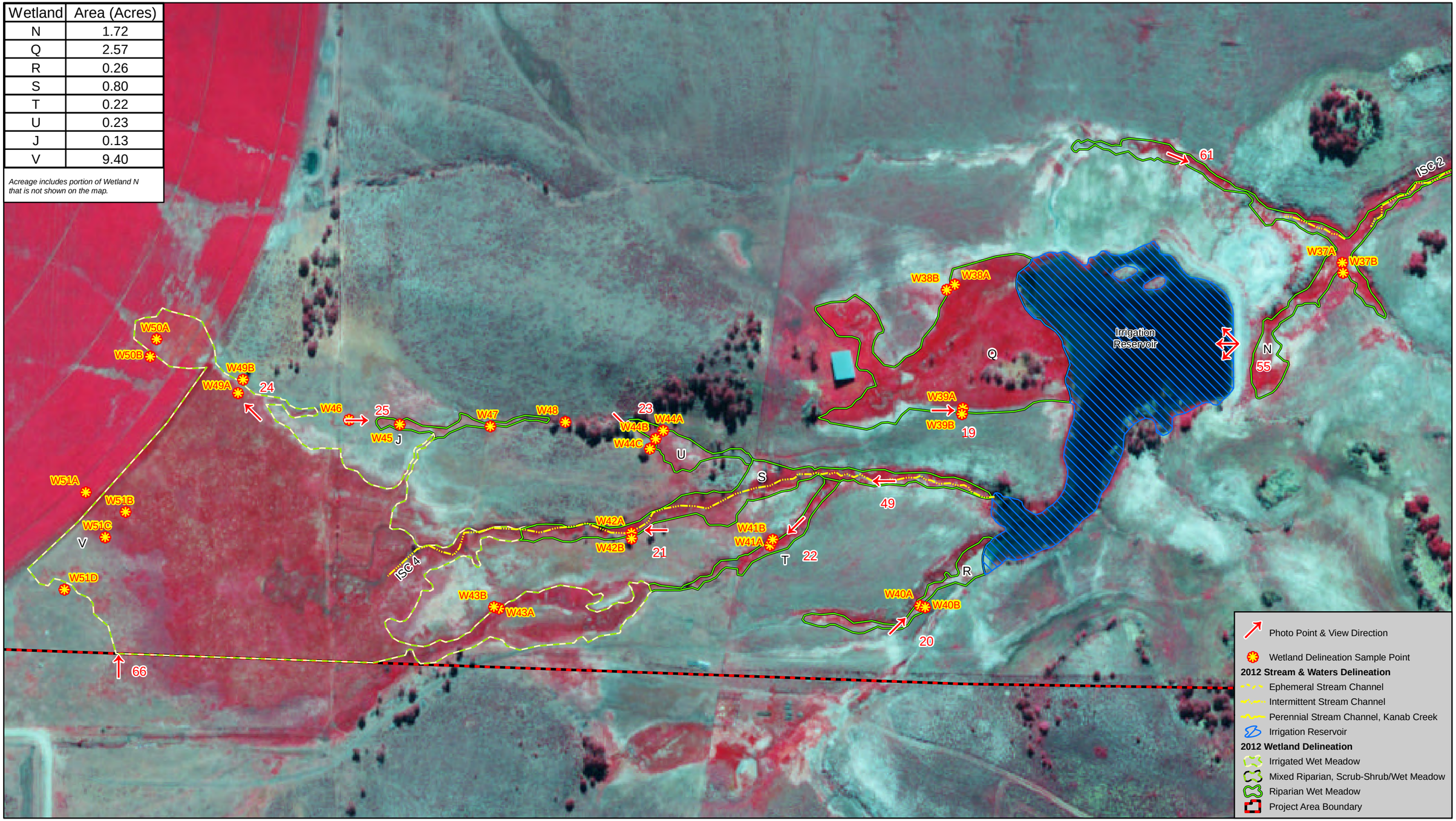
0 100 200 400 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Wetland	Area (Acres)
N	1.72
Q	2.57
R	0.26
S	0.80
T	0.22
U	0.23
J	0.13
V	9.40

Acreage includes portion of Wetland N that is not shown on the map.



Appendix A. Wetland Delineation, Map 13 of 15.

Map Date: July 31, 2012
Image Date: June 22, 2011

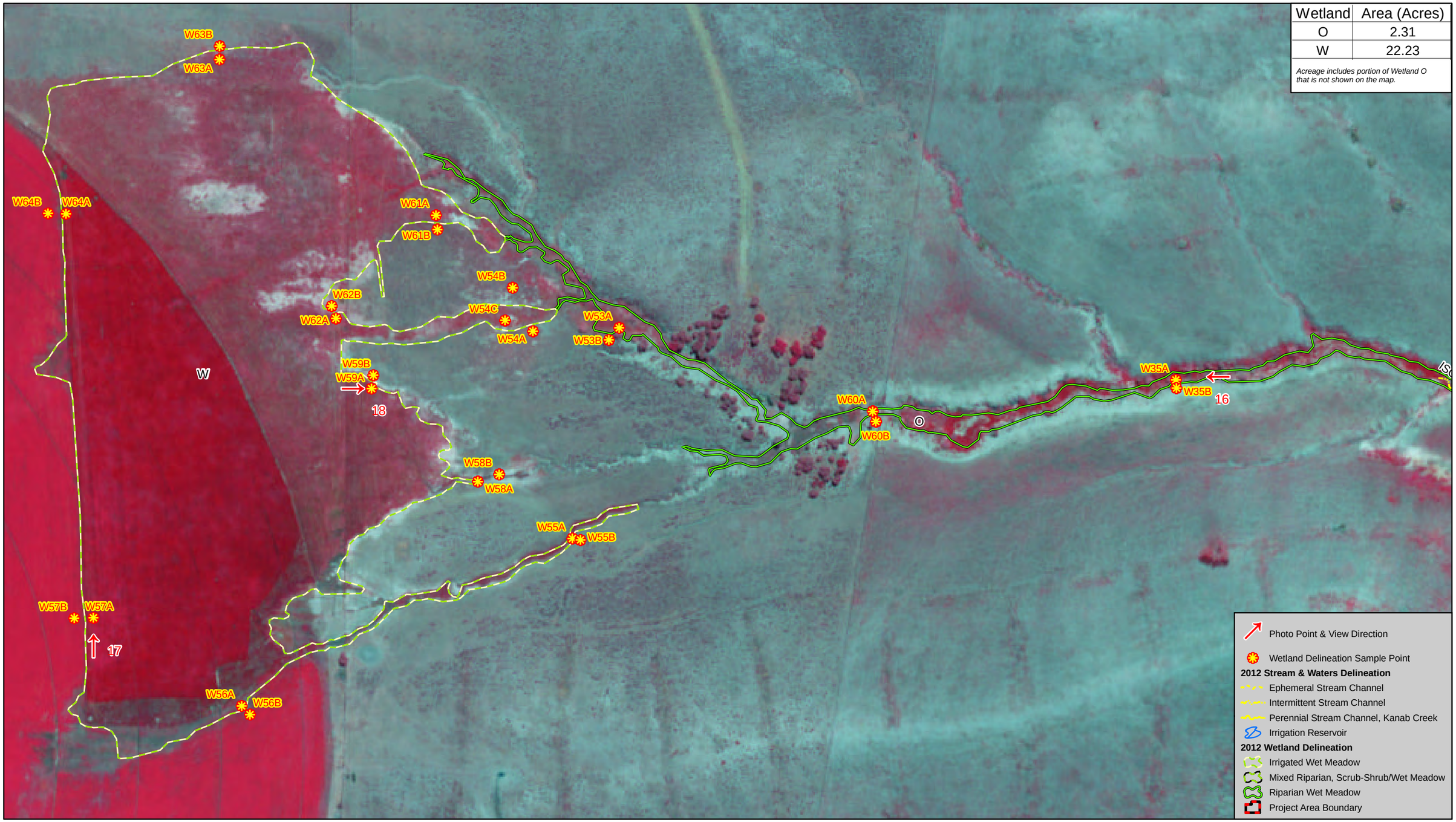
N

1 inch = 200 feet

0 100 200 400 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.



Wetland	Area (Acres)
O	2.31
W	22.23

Acreage includes portion of Wetland O that is not shown on the map.

Appendix A. Wetland Delineation, Map 14 of 15.

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

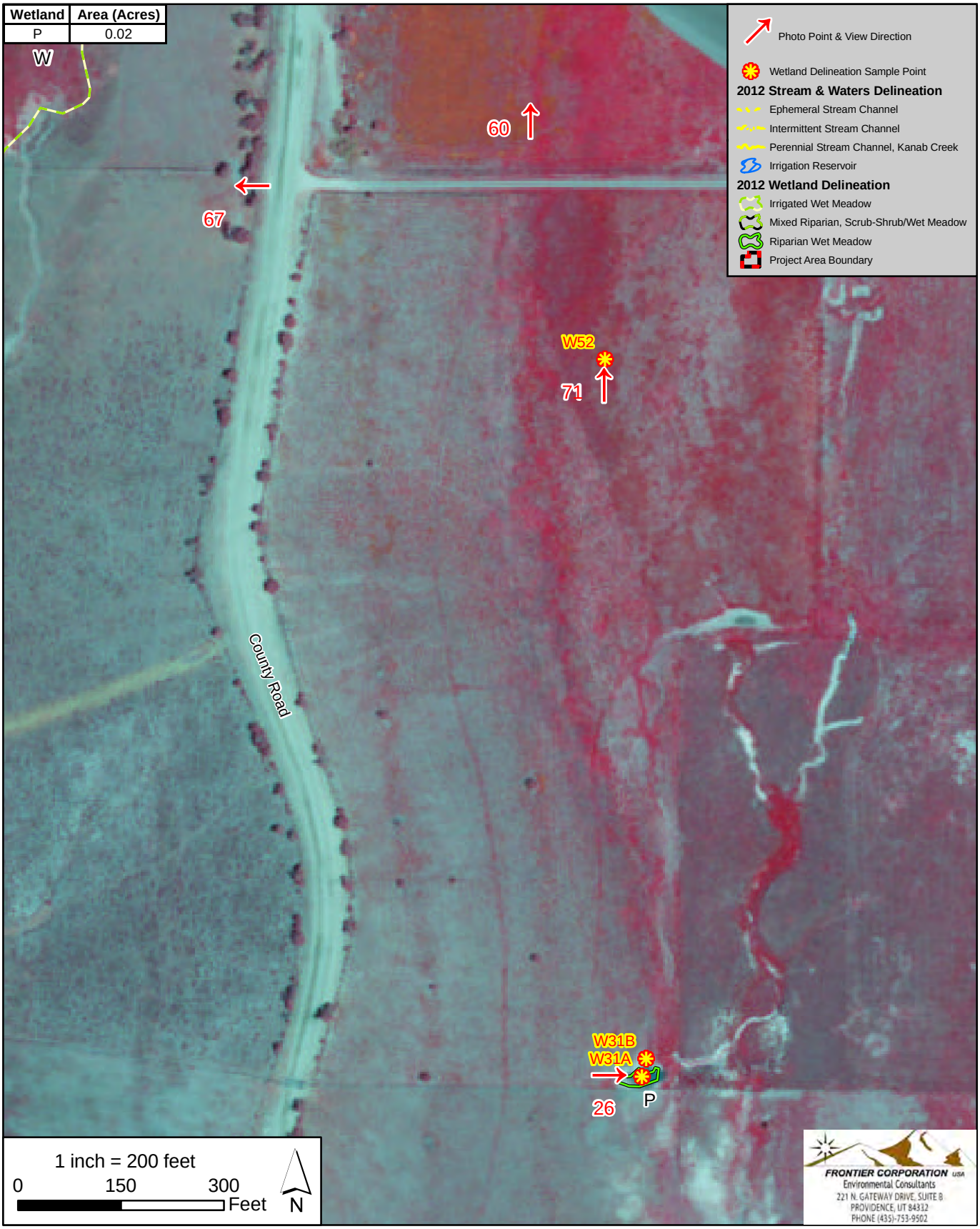
Map Date: July 31, 2012
Image Date: June 22, 2011

N

1 inch = 200 feet

0 100 200 400 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502



Appendix A. Wetland Delineation, Map 15 of 15.

Map Date: July 2, 2012
Image Date: June 22, 2011

Basemap color infrared imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

APPENDIX B

Wetland Delineation Data Sheets

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 21, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W01
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 0
Subregion (LRR): D	Easting: 370018	Northing: 4142433	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	
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 disturbed?	(If needed, explain any answers in Remarks.)	

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

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

Remarks: In bottom of vegetated drainage, no channel characteristics present. Photos of site: 832 - soil, 833 - northwest, 834 - west

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Rosa woodsii	2	Y	FACU
2.			
3.			
4.			
	2	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Poa pratensis	30	Y	FAC
2. Iris missouriensis	20	Y	FACW
3. Medicago sativa	20	Y	UPL
4. Juncus arcticus	10	N	FACW
5. Pascopyrum smithii	10	N	FAC
6. Convolvulus arvensis	5	N	UPL
7. Achillea millefolium	1	N	FACU
8. Bromus inermis	1	N	FACU
	97	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 3 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	30	x 2 =	60
FAC species:	40	x 3 =	120
FACU species:	4	x 4 =	16
UPL species:	25	x 5 =	125
Column Totals:	99 (A)		321 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Mixed vegetation

SOILS

Sampling Point: W01

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 - 10	10YR 6/3	100	-	-	-	-	silty loam	gravels present
10 - 18	10YR 6/3	100	-	-	-	-	sandy 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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Recent alluvial deposits. No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Site is dry. The sample point is placed in the lowest portion of the drainage swale.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W02A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 0
Subregion (LRR): D Easting: 371092	Northing: 4137461	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Terrace area of hillside seep. The area is flat and is covered in an alkaline crust that is very prevalent and powdery. Photos of site: 835 - soil, 836 - southeast, 837 - northwest

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	75	Y	FACW
2. Carex praegracilis	10	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	85	x 2 =	170
FAC species:		x 3 =	0
FACU species:		x 4 =	0
UPL species:		x 5 =	0
Column Totals:	85 (A)		170 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland vegetation

SOILS

Sampling Point: W02A

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 - 18	10YR 2/1	100	-	-	-	-	fine sand	sandy 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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Dark soil with prevalent hydrogen sulfide smell. No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: ___	No X	Depth (inches): ___	
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturated to the surface. The water table was not present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W02B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): concave	Slope (%): 5
Subregion (LRR): D	Easting: 371078	Northing: 4137477	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Hillside transitional area. Photos of site: 838 - soil, 839 - southeast, 840 - southwest, 841 - northwest, 842 - soil

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	25	Y	UPL
2.			
3.			
4.			
	25	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus tectorum	40	Y	UPL
2. Iva axillaris	40	Y	FAC
3. Juncus arcticus	7	N	FACW
4. Verbascum thapsus	3	N	FACU
5. Cirsium sp.	TR	N	-
6. Tragopogon dubius	TR	N	UPL
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	7	x 2 = 14
FAC species:	40	x 3 = 120
FACU species:	3	x 4 = 12
UPL species:	65	x 5 = 325
Column Totals:	115 (A)	471 (B)

Prevalence Index = B/A = 4.10

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland vegetation community.

SOILS

Sampling Point: W02B

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 - 1	10YR 3/2	100	-	-	-	-	sandy loam	root zone
1 - 18	10YR 2/2	100	-	-	-	-	sand	-

[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 C)**
- ____ 1 cm Muck (A9) **(LRR D)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR C)**
- ____ 2 cm Muck (A10) **(LRR B)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) **(Riverine)**
- ____ Sediment Deposits (B2) **(Riverine)**
- ____ Drift Deposits (B3) **(Riverine)**
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable no evidence of saturation

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W03A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): hillslope to drainage	Local relief (concave, convex, none): concave	Slope (%): >5
Subregion (LRR): D — Easting: 371116	Northing: 4137568	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Edge of drainage swale in the wetland on the hillslope. Photos of site: 850 - soil, 851 - northeast, 852 - south

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	85	Y	FACW
2. Poa secunda	5	N	FACU
3. Carex praegracilis	TR	N	FACW
4. Juncus sp.	TR	N	-
5.			
6.			
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	85	x 2 = 170
FAC species:		x 3 = 0
FACU species:	5	x 4 = 20
UPL species:		x 5 = 0
Column Totals:	90 (A)	190 (B)

Prevalence Index = B/A = 2.11

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: -

SOILS

Sampling Point: W03A

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 - 4	5Y 4/1	98	10YR 5/4	2	C	M	sandy loam	-
4 - 18	5Y 4/1	50	10YR 5/4	50	C	M	sandy 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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (**B10**)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: ___	No X	Depth (inches): ___	
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W03B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none):	Slope (%): 5
Subregion (LRR): D	Easting: 371117	Northing: 4137572	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Hillslope upland terrace. Photos of site: 852 - south, 853 - soil, 854 - east

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	5	Y	UPL
2. Chrysothamnus nauseosus	5	Y	UPL
3.			
4.			
	10	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus tectorum	40	Y	UPL
2. Iva axillaris	20	Y	FAC
3. Poa pratensis	20	Y	FAC
4. Hordeum jubatum	10	N	FAC
5. Aster sp.	5	N	-
6. Cirsium sp.	1	N	-
7.			
8.			
	96	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 4 % Cover of Biotic Crust

Dominance Test Worksheet:

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

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	50	x 3 = 150
FACU species:		x 4 = 0
UPL species:	50	x 5 = 250
Column Totals:	100 (A)	400 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

Dominance Test >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Upland vegetation community.

SOILS

Sampling Point: W03B

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 - 18	10YR 3/2	100	-	-	-	-	fine sand	platy structure

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? Yes: No: X

Remarks: Soil column fell apart. No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes: No: X

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W04A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): drainage swale	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 371238	Northing: 4137616	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wetland located in a drainage swale. Photos of site: 863 - soil, 864 - north, 865 - south

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	80	Y	FACW
2. Hordeum jubatum	5	N	FAC
3. Poa pratensis	5	N	FAC
4. Pascopyrum smithii	5	N	FAC
5. Achillea millefolium	3	N	FACU
6. Taraxacum officinale	2	N	FACU
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	80	x 2 = 160
FAC species:	15	x 3 = 45
FACU species:	5	x 4 = 20
UPL species:		x 5 = 0
Column Totals:	100 (A)	225 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: -

SOILS

Sampling Point: W04A

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 - 18	2.5Y 5/2	98	10YR 5/6	2	D	M	clay	sandstone 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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: *Juncus* rhizomes present throughout the column.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil column is moist but not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W04B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): concave	Slope (%): 5
Subregion (LRR): D	Easting: 371235	Northing: 4137617	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: On hillslope approximately 3 feet higher in elevation than the W04A. Photos of site: 866 - soil, 867 - east, 868 - south

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	15	Y	UPL
2.			
3.			
4.			
	15	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus tectorum	20	Y	UPL
2. Iva axillaris	15	Y	FAC
3. Hordeum jubatum	7	N	FAC
4. Aster sp.	2	N	-
5. Ipomopsis aggregata	1	N	UPL
6.			
7.			
8.			
	45	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 55 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	22	x 3 = 66
FACU species:		x 4 = 0
UPL species:	36	x 5 = 180
Column Totals:	58 (A)	246 (B)

Prevalence Index = B/A = 4.24

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: A lot of bare ground and upland plant community.

SOILS

Sampling Point: W04B

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 - 18	10YR 3/2	100	-	-	-	-	find sand	-

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W05A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D	Easting: 371042	Northing: 4137883	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: In the bottom of a drainage swale. Photos of site: 873 - soil, 874 - south, 875 - north

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	65	Y	FACW
2. Carex praegracilis	7	N	FACW
3. Hordeum jubatum	7	N	FAC
4. Poa pratensis	7	N	FAC
5. Taraxacum officinale	2	N	FACU
6.			
7.			
8.			
	88	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 12 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	72	x 2 =	144
FAC species:	14	x 3 =	42
FACU species:	2	x 4 =	8
UPL species:		x 5 =	0
Column Totals:	88 (A)		194 (B)

Prevalence Index = B/A = 2.20

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Wetland vegetation community

SOILS

Sampling Point: W05A

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 - 18	2.5Y 5/2	70	10YR 5/6	30	C	M	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: High amounts of root material present throughout the column

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Alkali powder on surface. Soil is moist, not saturated. It is assumed that early season hydrology is responsible for wetland characteristics.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W05B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): convex	Slope (%): 70
Subregion (LRR): D	Easting: 371038	Northing: 4137885	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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:** **No: X**
Hydric Soil Present?	Yes:	No: X	
Wetland Hydrology Present?	Yes:	No: X	

Remarks: Mostly unvegetated hillslope that is approximately 3 feet above the drainage bottom. Photos of site: 876 - soil and 877 - east

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Poa pratensis	3	Y	FAC
2. Juncus arcticus	3	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	6	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 94 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	3	x 2 = 6
FAC species:	3	x 3 = 9
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	6 (A)	15 (B)

Prevalence Index = B/A = 2.50

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Marginal vegetation community that is having difficulty becoming established due to the steepness of the slope.

SOILS

Sampling Point: W05B

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 - 18	10YR 5/3	100	-	-	-	-	clay loam	Mixed profile on the crumbling slope that has white calcium nodules present that are non-hydric

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? Yes: No: X

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

Wetland Hydrology Present? Yes: No: X

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil column was dry and friable. Approximately 3 feet above wetland sample point and does receive the same hydrology as the bottom of the drainage.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W06A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): drainage swale	Local relief (concave, convex, none): concave	Slope (%): 1
Subregion (LRR): D Easting: 371507	Northing: 4138366	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Located in a drainage swale. Photos of site: 881 - soil, 882 - southeast, 883 - northwest

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	40	Y	FACW
2. Carex praegracilis	35	Y	FACW
3. Poa sp.	15	N	-
4.			
5.			
6.			
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	75	x 2 = 150
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	75 (A)	150 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community

SOILS

Sampling Point: W06A

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 - 18	10YR 6/2	70	10YR 5/6	30	C	M	clay	crumbly structure

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Hydrogen sulfide smell is faint.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ___ No X Depth (inches): ___

Water Table Present? Yes: ___ No X Depth (inches): ___

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Alkali powder on surface. Soil column was moist, not saturated. It is assumed that early hydrology is responsible for wetland characteristics.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W06B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 0
Subregion (LRR): D Easting: 371518	Northing: 4138370	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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:** **No:**
Hydric Soil Present?	Yes:	No: X	
Wetland Hydrology Present?	Yes:	No: X	

Remarks: Upland terrace within the wicking zone of the drainage swale. It is approximately 3 feet higher in elevation than the wetland sample point, W06B. Photos of site: 886 - soil, 887 - southwest, 888 - southeast

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	20	Y	FACW
2. Carex praegracilis	5	N	FACW
3. Achillea millefolium	5	N	FACU
4. Pascopyrum smithii	5	N	FAC
5.			
6.			
7.			
8.			
	35	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 65 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	25	x 2 = 50
FAC species:	5	x 3 = 15
FACU species:	5	x 4 = 20
UPL species:		x 5 = 0
Column Totals:	35 (A)	85 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community

SOILS

Sampling Point: W06B

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	7.5YR 5/4	100	-	-	-	-	silty clay	fine crumbly structure
3 - 18	7.5YR 5/6	100	-	-	-	-	silty clay	fine crumbly structure

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? Yes: No: X

Remarks: Soil is crumbly without any redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

Wetland Hydrology Present? Yes: No: X

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Edge of wicking zone on the break. The soil was dry and friable. Approximately 3 feet higher in elevation than the wetland sample point.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W07
Investigator(s): Jeff Bolce, Dennis Wenger, Collin Covington	Section, Township, Range: 31, 39S, 5W	
Landform (hillslope, terrace, etc.): drainage swale	Local relief (concave, convex, none): concave	Slope (%): 1
Subregion (LRR): D — Easting: 370110	Northing: 4138242	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: No: X
Hydric Soil Present?	Yes:	No: X	
Wetland Hydrology Present?	Yes:	No: X	

Remarks: Located in a drainage swale below the confluence of two upland drainage swales that do not have any channel characteristics. Photos of site: 897 - northeast, 898 - soil, 899 - southwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	60	Y	FACW
2. Pascopyrum smithii	40	Y	FAC
3. Iva axillaris	1	N	FAC
4. Aster sp.	1	N	-
5. Poa pratensis	1	N	FAC
6.			
7.			
8.			
	103	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	60	x 2 = 120
FAC species:	42	x 3 = 126
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	102 (A)	246 (B)

Prevalence Index = B/A = 2.41

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Wetland plant community

SOILS

Sampling Point: W07

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 - 18	10YR 4/1	100	-	-	-	-	clay	fine granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed. Roots present throughout.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. No evidence of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W08A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 25, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): concave	Slope (%): 1
Subregion (LRR): D	Easting: 369390	Northing: 4138483	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wetland area adjacent to Ephemeral Stream Channel 14. Channel is a step-pool system. Photos of site: 900 - soil, 901 - east, 902 - north

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Salix exigua	2	Y	FACW
2.			
3.			
4.			
	2	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	65	Y	FACW
2. Carex sp.	15	N	-
3. Medicago sativa	10	N	UPL
4. Taraxacum officinale	5	N	FACU
5. Poa pratensis	3	N	FAC
6. Achillea millefolium	2	N	FACU
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	67	x 2 = 134
FAC species:	3	x 3 = 9
FACU species:	7	x 4 = 28
UPL species:	10	x 5 = 50
Column Totals:	87 (A)	221 (B)

Prevalence Index = B/A = 2.54

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Wetland plant community.

SOILS

Sampling Point: W08A

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 - 0.25	10YR 2/1	100	-	-	-	-	clay	-
0.25 - 8	2.5Y 5/2	80	10YR 5/6	20	C	M	clay	alluvial material

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Gravels

Depth (inches): 8

Hydric Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 6	
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Water present in the sample pit.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W08B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 25, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 60
Subregion (LRR): D	Easting: 369393	Northing: 4138485	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Located on the adjacent hillslope that is approximately 3 feet higher in elevation than the wetland sample point (W08A). Photos of site: 903 - soil, 904 - south

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	13	Y	UPL
2. Salix exigua	2	N	FACW
3.			
4.			
	15	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	4	Y	FACW
2. Medicago sativa	4	Y	UPL
3. Iva axillaris	2	Y	FAC
4.			
5.			
6.			
7.			
8.			
	10	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 90 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	6	x 2 = 12
FAC species:	2	x 3 = 6
FACU species:		x 4 = 0
UPL species:	17	x 5 = 85
Column Totals:	25 (A)	103 (B)

Prevalence Index = B/A = 4.12

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Mixed, upland vegetation community.

SOILS

Sampling Point: W08B

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 - 18	10YR 5/3	100	-	-	-	-	silty clay	fine granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed. Crumbling hillslope with rock and gravel mixed in.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W09
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 25, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369571	Northing: 4139257	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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:** **No: X**
Hydric Soil Present?	Yes:	No: X	
Wetland Hydrology Present?	Yes:	No: X	

Remarks: Drainage swale. Photos of site: 908 - soil, 909 - west, 910 - east

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	50	Y	FACW
2. Poa pratensis	40	Y	FAC
3. Bromus inermis	10	N	FACU
4. Achillea millefolium	5	N	FACU
5. Taraxacum officinale	TR	N	UPL
6.			
7.			
8.			
	105	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	50	x 2 = 100
FAC species:	40	x 3 = 120
FACU species:	15	x 4 = 60
UPL species:		x 5 = 0
Column Totals:	105 (A)	280 (B)

Prevalence Index = B/A = 2.67

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community

SOILS

Sampling Point: W09

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	10YR 5/2	100	-	-	-	-	silty clay	densely rooted
3 - 9	10YR 5/2	100	-	-	-	-	silty clay	granular and gravels

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Gravels

Depth (inches): 9

Hydric Soil Present? **Yes:** **No: X**

Remarks: No redox observed. Friable and fluvial material.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology observed. Site was dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W10A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 19, 39S, 5W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): concave	Slope (%): 4
Subregion (LRR): D	Easting: 370575	Northing: 4140637	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Seep in drainage at the top of Ephemeral Stream Channel 7. Pools of standing water present in drainage. Photos of site: 911 - soil, 912 - south, 913 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	60	Y	FACW
2. Carex microptera	30	Y	FAC
3. Poa pratensis	10	N	FAC
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	60	x 2 =	120
FAC species:	40	x 3 =	120
FACU species:		x 4 =	0
UPL species:		x 5 =	0
Column Totals:	100 (A)		240 (B)

Prevalence Index = B/A = 2.40

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland vegetation community.

SOILS

Sampling Point: W10A

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 - 18	10YR 5/1	98	10YR 5/6	2	C	M	clay	dense and sticky

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Roots present throughout.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ___ No X Depth (inches): ___

Water Table Present? Yes: ___ No X Depth (inches): ___

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil column is moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 22, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W10B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 19, 39S, 5W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 75
Subregion (LRR): D	Easting: 370573	Northing: 4140637	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Hillslope to drainage bottom. Approximately 4 feet above the wetland sample point. Photos of site: 913 - west, 914 - soil, 915 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus edulis	5	Y	UPL
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	10	Y	FACW
2. Bromus inermis	3	Y	FACU
3. Fabaceae sp.	2	N	-
4.			
5.			
6.			
7.			
8.			
	15	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 85 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	10	x 2 = 20
FAC species:		x 3 = 0
FACU species:	3	x 4 = 12
UPL species:	5	x 5 = 25
Column Totals:	18 (A)	57 (B)

Prevalence Index = B/A = 3.17

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland vegetation community.

SOILS

Sampling Point: W10B

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 - 18	2.5Y 5/2	100	-	-	-	-	clay	fine granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W11A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): concave	Slope (%): 1
Subregion (LRR): D	Easting: 368871	Northing: 4140989	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: X No: (If no, explain in Remarks.)

Are Vegetation: X , Soil: X , or Hydrology: significantly disturbed? Are "Normal Circumstances" present? Yes: X No:

Are Vegetation: , Soil: , or Hydrology: naturally disturbed? (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: The upland terrace of Pinyon / Juniper trees had been cleared and pushed into the drainage and wetland. The wetland is approximately 8 feet wide. Photos of site: 919 - soil and 920 - west

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	85	Y	FACW
2. Taraxacum officinale	10	N	FACU
3. Carex nebrascensis	3	N	OBL
4. Poa pratensis	2	N	FAC
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:	3	x 1= 3
FACW species:	85	x 2 = 170
FAC species:	2	x 3 = 6
FACU species:	10	x 4 = 40
UPL species:		x 5 = 0
Column Totals:	100 (A)	219 (B)

Prevalence Index = B/A = 2.19

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W11A

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 - 18	10YR 4/1	99	10YR 5/6	1	C	M	clay	sticky

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 8	**Wetland Hydrology Present?** **Yes: X** **No:**
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W11B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 35
Subregion (LRR): D	Easting: 368873	Northing: 4140989	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Fill material pushed downslope from upgradient road grading, native material. Approximately 2 feet above the wetland sample point. Photos of site: 921 - sample point

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	5	Y	UPL
2.			
3.			
4.			
	5	= Total Cover	
Herb Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:	5	x 5 = 25
Column Totals:	5 (A)	25 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Herbaceous plants had been buried.

SOILS

Sampling Point: W11B

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 - 18	10YR 4/2	100	-	-	-	-	clay	fine granular

[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 C)**
- ____ 1 cm Muck (A9) **(LRR D)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR C)**
- ____ 2 cm Muck (A10) **(LRR B)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Native material

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) **(Riverine)**
- ____ Sediment Deposits (B2) **(Riverine)**
- ____ Drift Deposits (B3) **(Riverine)**
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Friable and dry.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W12A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D Easting: 369356	Northing: 4141669	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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:
Hydric Soil Present?	Yes: X	No:
Wetland Hydrology Present?	Yes: X	No:

Is the Sampled Area within a Wetland? **Yes: X** **No:**

Remarks: Adjacent to intermittent stream channel 2. Photos of site: 926 - soil, 927 - north, 928 - east

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	60	Y	FACW
2. Eleocharis palustris	15	N	OBL
3. Hordeum jubatum	15	N	FAC
4. Kochia scoparia	5	N	UPL
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	15	x 1=	15
FACW species:	60	x 2 =	120
FAC species:	15	x 3 =	45
FACU species:		x 4 =	0
UPL species:	5	x 5 =	25
Column Totals:	95 (A)		205 (B)

Prevalence Index = B/A = 2.16

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W12A

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 - 12	10YR 5/2	50	7.5YR 4/6	50	C	M	sandy clay	-
12 - 18	7.5YR 2.5/1	60	7.5YR 4/6	40	C	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil column is moist. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W12B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D Easting: 369361	Northing: 4141670	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: On terrace adjacent to wetland and hillslope into drainage. Photos of site: 929 - soil and 930 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Kochia scoparia	30	Y	UPL
2. Pascopyrum smithii	30	Y	FAC
3. Achillea millefolium	10	N	FACU
4.			
5.			
6.			
7.			
8.			
	70	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	30	x 3 = 90
FACU species:	10	x 4 = 40
UPL species:	30	x 5 = 150
Column Totals:	70 (A)	280 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W12B

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 - 10	10YR 5/2	100	-	-	-	-	sandy loam	angular, granular
10 - 18	10YR 5/2	80	10YR 5/6	20	C	M	clay	fine granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox present in upper 10 inches of the profile. Redox is too deep to qualify for a depleted matrix.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W13A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369279	Northing: 4141903	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Adjacent to Intermittent Stream Channel 2. Photos of site: 938 - soil, 939 - west, 940 - north

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	75	Y	FACW
2. Hordeum jubatum	25	Y	FAC
3. Medicago sativa	TR	N	UPL
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	75	x 2 = 150
FAC species:	25	x 3 = 75
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	100 (A)	225 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community

SOILS

Sampling Point: W13A

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 - 11	10YR 5/2	80	7.5YR 4/6	20	C	M	clay	granular
11 - 18	2.5YR 4/1	65	7.5YR 4/6	20	C	M	clay	granular
"	10YR 5/2	15						

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: Gravel and wood material found below 11 inches mixed into the clay.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W13B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 5
Subregion (LRR): D	Easting: 369264	Northing: 4141903	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: On the side of the channel bottom near the base of the slope. Approximately 12 inches higher in elevation than the wetland sample point. Photos in site: 941 - slope and 942 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	20	Y	UPL
2. Chrysothamnus nauseosus	20	Y	UPL
3.			
4.			
	40	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	15	Y	FACW
2. Medicago sativa	15	Y	UPL
3. Achillea millefolium	10	N	FACU
4. Pascopyrum smithii	10	N	FAC
5. Bromus inermis	2	N	FACU
6. Taraxacum officinale	2	N	FACU
7.			
8.			
	54	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 46 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	15	x 2 =	30
FAC species:	10	x 3 =	30
FACU species:	14	x 4 =	56
UPL species:	55	x 5 =	275
Column Totals:	94 (A)		391 (B)

Prevalence Index = B/A = 4.16

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community

SOILS

Sampling Point: W13B

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 - 12	10YR 5/2	100	-	-	-	-	clay	fine granular
12 - 18	10YR 4/2	99	7.5 YR 4/6	1	C	M	clay	fine granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox within the top 10 inches. Does not meet the F3 requirements.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W14A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369484	Northing: 4141328	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Adjacent to Intermittent Stream Channel 2. Photos of site: 943 - soil, 944 - east, 945 - north

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	55	Y	FACW
2. Carex microptera	35	Y	FAC
3. Hordeum jubatum	10	N	FAC
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	60	x 2 = 120
FAC species:	45	x 3 = 135
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	105 (A)	255 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community

SOILS

Sampling Point: W14A

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 - 1	10YR 4/2	100	-	-	-	-	clay	-
1 - 17	10YR 4/2	75	7.5YR 4/4	25	C	M	clay	organics and roots present
17 - 18	Gley 1 4/10Y	75	7.5YR 4/4	25	C	M	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: Column is tightly packed together

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil column was dry. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W14B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369493	Northing: 4141326	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Toe of high terrace slop in the uplands adjacent to drainage floor. 948 - soil, 949 - south, 950 - west

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	5	Y	UPL
2.			
3.			
4.			
	5	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Achillea millefolium	20	Y	FACU
2. Poa pratensis	20	Y	FAC
3. Pascopyrum smithii	15	Y	FAC
4. Taraxacum officinale	15	Y	FACU
5. Grindelia squarrosa	5	N	FACU
6. Chenopodium sp.	TR	N	-
7.			
8.			
	75	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	40	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	35	x 3 = 105
FACU species:	40	x 4 = 160
UPL species:	5	x 5 = 25
Column Totals:	80 (A)	290 (B)

Prevalence Index = B/A = 3.63

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community

SOILS

Sampling Point: W14B

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 - 13	10YR 4/2	100	-	-	-	-	clay	fine granular
13 - 18	10YR 5/2	99	10YR 5/6	>1	C	M	clay	fine granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? Yes: No: X

Remarks: No redox in upper 10 inches of the soil column and the redox in the column is less than 1%.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes: No: X

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry in upper portion of column and the lower portion is moist.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W15A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369494	Northing: 4141210	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Adjacent to intermittent stream channel 2. Photos of site: 951 - soil and 952 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Carex praegracilis	45	Y	FACW
2. Juncus arcticus	25	Y	FACW
3. Hordeum jubatum	10	N	FAC
4. Grindelia squarrosa	5	N	FACU
5. Taraxacum officinale	TR	N	FACU
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	70	x 2 =	140
FAC species:	10	x 3 =	30
FACU species:	5	x 4 =	20
UPL species:		x 5 =	0
Column Totals:	85 (A)		190 (B)

Prevalence Index = B/A = 2.24

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W15A

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 - 11	10YR 5/1	80	10YR 5/4	20	C	M	clay	-
11 - 18	10YR 5/1	50	10YR 5/4	50	C	M	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: More redox in the deeper parts of the column that vary between 20% and 50% in density. Roots present throughout the column. Between 10" and 11" there is soil stratification.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ____	No X	Depth (inches): ____	
Water Table Present?	Yes: ____	No X	Depth (inches): ____	**Wetland Hydrology Present?** **Yes: X** **No:**
Saturation Present? (incl. capillary fringe)	Yes:	No X	Depth (inches):	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry. It is assumed that early season water levels are sufficient to support wetland conditions. Sample point is located approximately 12' from a transient channel off of Intermittent Stream Channel 2.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W15B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D Easting: 369491	Northing: 4141212	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Adjacent to Intermittent Stream Channel 2. Photos of site: 953 - soil and 954 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Grindelia squarrosa	30	Y	FACU
2. Juncus arcticus	20	Y	FACW
3. Poa pratensis	20	Y	FAC
4. Hordeum jubatum	5	N	FAC
5. Taraxacum officinale	5	N	FACU
6.			
7.			
8.			
	80	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	66.7	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	20	x 2 = 40
FAC species:	25	x 3 = 75
FACU species:	35	x 4 = 140
UPL species:		x 5 = 0
Column Totals:	80 (A)	255 (B)

Prevalence Index = B/A = 3.19

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Marginal wetland plant community.

SOILS

Sampling Point: W15B

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 - 18	10YR 4/1	85	10YR 5/6	15	C	M	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W15C
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369480	Northing: 4141208	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Slightly higher in elevation than the adjacent wetland sample points. Photos of site: 955 - soil and 956 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Convolvulus arvensis	35	Y	UPL
2. Poa pratensis	20	Y	FAC
3. Grindelia squarrosa	20	Y	FACU
4. Bromus tectorum	15	N	UPL
5. Achillea millefolium	2	N	FACU
6. Thinopyrum intermedium	TR	N	UPL
7.			
8.			
	92	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 8 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	20	x 3 = 60
FACU species:	22	x 4 = 88
UPL species:	50	x 5 = 250
Column Totals:	92 (A)	398 (B)

Prevalence Index = B/A = 4.33

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: -

SOILS

Sampling Point: W15C

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 - 16	10YR 4/1	100	-	-	-	-	clay	fine granular
16 - 18	10YR 4/1	99	7.5YR 5/6	>1	C	M	clay	faint redox

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Not enough redox and it is found too deep in the soil profile to qualify for hydric condtions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No _X_ Depth (inches): ____

Water Table Present? Yes: ____ No _X_ Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W16A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 2
Subregion (LRR): D	Easting: 369201	Northing: 4140108	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Sample point is approximately 12 inches above and 3 feet east of the flowing water in Kanab Creek. Photos of site: 961 - soil, 962 - north, 963 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Salix exigua	5	Y	FACW
2.			
3.			
4.			
	5	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	40	Y	FACW
2. Triglochin maritima	5	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
	45	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 55 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	5	x 1=	5
FACW species:	45	x 2 =	90
FAC species:		x 3 =	0
FACU species:		x 4 =	0
UPL species:		x 5 =	0
Column Totals:	50 (A)		95 (B)

Prevalence Index = B/A = 1.90

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Wetland plant community

SOILS

Sampling Point: W16A

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 - 2	Gley 1 3/5GY	100	-	-	-	-	sandy clay	-
2 - 5	10YR 4/3	100	-	-	-	-	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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Gravels

Depth (inches): 5

Hydric Soil Present? **Yes: X** **No:**

Remarks: No redox present, alluvial materials.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ___ No X Depth (inches): ___

Water Table Present? Yes: X No ___ Depth (inches): 11

Saturation Present? (incl. capillary fringe) Yes: X No Depth (inches): 0

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W16B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D	Easting: 369213	Northing: 414097	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Terrace adjacent to wetland along Kanab Creek. Approximately 3 feet higher in elevation than wetland sample point. Photos of site: 958 - soil, 959 - west, 960 - southwest

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	50	Y	FACU
2. Juncus arcticus	20	Y	FACW
3. Medicago sativa	20	Y	UPL
4. Poa pratensis	5	N	FAC
5. Equisetum hyemale	TR	N	FACW
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	20	x 2 = 40
FAC species:	5	x 3 = 15
FACU species:	50	x 4 = 200
UPL species:	20	x 5 = 100
Column Totals:	95 (A)	355 (B)

Prevalence Index = B/A = 3.74

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community

SOILS

Sampling Point: W16B

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 - 18	10YR 6/3	100	-	-	-	-	sand	very fine granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks; Dry. No wetland hydrology indicators.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W17A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369532	Northing: 4140540	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Kanab Creek bottoms. Photos of site: 968 - soil, 969 - west, 970 - south

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Salix exigua	15	Y	FACW
2.			
3.			
4.			
	15	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus mexicanus	40	Y	FACW
2. Juncus arcticus	35	Y	FACW
3. Carex praegracilis	10	N	FACW
4.			
5.			
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	100	x 2 = 200
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	100 (A)	200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community

SOILS

Sampling Point: W17A

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 - 2	10YR 5/2	100	-	-	-	-	sandy clay	pour linings present
2 - 18	10YR 5/1	30	10YR 5/6	20	C	M	sandy clay	sandy portion of matrix
"	Gley 1 2.5/N	50						

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 8	
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Appears to be the active floodplain of Kanab Creek.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W17B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 5
Subregion (LRR): D	Easting: 369526	Northing: 4140541	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Sample point is approximately 3 feet above the inactive low terrace. Photos of site: 971 - soil, 972 - west, 973 - cactus, 974 - east

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	25	Y	UPL
2. Salix exigua	15	Y	FACW
3.			
4.			
	40	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	20	Y	FACU
2. Opuntia sp.	3	N	-
3. Aster sp.	2	N	-
4. Bromus sp.	2	N	-
5. Fabaceae sp.	TR	N	-
6.			
7.			
8.			
	27	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 73 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	15	x 2 =	30
FAC species:		x 3 =	0
FACU species:	20	x 4 =	80
UPL species:	25	x 5 =	125
Column Totals:	60 (A)		235 (B)

Prevalence Index = B/A = 3.92

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community

SOILS

Sampling Point: W17B

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 - 18	-	-	-	-	-	-	sand/gravel	-

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Sandy cobble and gravel on inactive low terrace, poor soil development.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No _X_ Depth (inches): ____

Water Table Present? Yes: ____ No _X_ Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W18A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage bottom	Local relief (concave, convex, none): concave	Slope (%): >1
Subregion (LRR): D	Easting: 369633	Northing: 4140582	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Abandoned oxbow channel that is connected to Kanab Creek. Photos of site: 975 - soil and 976 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Eleocharis palustris	90	Y	OBL
2. Juncus arcticus	5	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	90	x 1=	90
FACW species:	5	x 2 =	10
FAC species:		x 3 =	0
FACU species:		x 4 =	0
UPL species:		x 5 =	0
Column Totals:	95 (A)		100 (B)

Prevalence Index = B/A = 1.05

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W18A

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 - 6	Gley 1 4/N	100	-	-	-	-	clay	-
6 - 18	Gley 1 4/N	20	-	-	-	-	clay	80% gravel/cobble

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: X	No ___	Depth (inches): 1	
Water Table Present?	Yes: X	No ___	Depth (inches): -	**Wetland Hydrology Present?** **Yes: X** **No:**
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): -	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 23, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W18B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 10
Subregion (LRR): D	Easting: 369635	Northing: 4140575	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: At the base of the hillslope near the oxbow. Approximately 12 inches higher in elevation than wetland sample point. Photos of site: 977 - soil and 978 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus gambelii	25	Y	UPL
2.			
3.			
4.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	30	Y	UPL
2. Chrysothamnus nauseosus	15	N	UPL
3. Rosa woodsii	5	N	FACU
4.			
	50	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	20	Y	FACU
2. Poa pratensis	20	Y	FAC
3. Achillea millefolium	5	N	FACU
4.			
5.			
6.			
7.			
8.			
	45	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover: 0			

% Bare Ground in Herb Stratum 55 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:		x 2 =	0
FAC species:	20	x 3 =	60
FACU species:	30	x 4 =	120
UPL species:	70	x 5 =	350
Column Totals:	120 (A)		530 (B)

Prevalence Index = B/A = 4.42

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W18B

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 - 20	10YR 3/2	100	-	-	-	-	clay	fine granular
20 - 22	10YR 5/2	100	10YR 5/6	1	C	M	sand	fine granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Redox is too deep to qualify for hydric conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ____	No X	Depth (inches): ____	
Water Table Present?	Yes: X	No ____	Depth (inches): 20	**Wetland Hydrology Present?** **Yes:** **No: X**
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 18	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The sample point is higher in elevation and likely does not receive adequate hydrology to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W19A
Investigator(s): Jeff Bolce, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): channel floor	Local relief (concave, convex, none): concave	Slope (%):1
Subregion (LRR): D Easting: 369581	Northing: 4140679	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Side channel in the Kanab Creek floodplain. Photos of site: 997 - soil, 998 - south, 999 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Salix exigua	10	Y	FACW
2.			
3.			
4.			
	10	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Eleocharis palustris	25	Y	OBL
2. Juncus arcticus	10	N	FACW
3. Poa secunda	5	N	FACU
4.			
5.			
6.			
7.			
8.			
	40	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	25	x 1=	25
FACW species:	20	x 2 =	40
FAC species:		x 3 =	0
FACU species:	5	x 4 =	20
UPL species:		x 5 =	0
Column Totals:	50 (A)		85 (B)

Prevalence Index = B/A = 1.70

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W19A

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 - 3	10YR 5/2	100	7.5YR 5/6	5	C	M	clay	-
3 - 4	-	100	-	-	-	-	sand/gravel	deposition
4 - 10	10YR 5/1	90	5YR 4/6	10	C	M	sandy clay	decaying organic material
10	Restrictive Layer							

[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 C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Gravel/Cobble

Depth (inches): 10

Hydric Soil Present? **Yes: X** **No:**

Remarks: Hydric soil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: ___	No X	Depth (inches): ___	
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W19B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): concave	Slope (%): 1
Subregion (LRR): D Easting:369572	Northing: 4140676	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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:** **No: X**
Hydric Soil Present?	Yes:	No: X	
Wetland Hydrology Present?	Yes:	No: X	

Remarks: Low terrace that is approximately 2 feet above the wetland sample point. Photos of site: 994 - soil, 995 - north, 996 - west

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Salix exigua	10	Y	FACW
2.			
3.			
4.			
	10	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Equisetum arvense	10	Y	FAC
2. Medicago sativa	10	Y	UPL
3. Poa secunda	1	N	FACU
4.			
5.			
6.			
7.			
8.			
	21	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 79 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	66.7	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	10	x 2 =	20
FAC species:	10	x 3 =	30
FACU species:	1	x 4 =	4
UPL species:	10	x 5 =	50
Column Totals:	31 (A)		104 (B)

Prevalence Index = B/A = 3.35

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Mostly unvegetated with the Salix exigua driving the dominance test in this area. The herb stratum does not meet the wetland plant community requirements.

SOILS

Sampling Point: W19B

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 - 18	-	-	-	-	-	-	sand/gravel	No soil development

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No soil development, the terrace is composed of sand and gravel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Well drained and dry. Approximately 2 feet above the wetland and likely only receives adequate hydrology during high flow events.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W20A
Investigator(s): Jeff Bolce, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369579	Northing: 4140817	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wetland near Kanab Creek on the drainage floor. Photos of site: 1010 - soil, 1011 - east, and 1012 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	35	Y	FACW
2. Carex microptera	15	Y	FAC
3. Equisetum arvense	10	N	FAC
4. Iris missouriensis	5	N	FACW
5.			
6.			
7.			
8.			
	65	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	40	x 2 = 80
FAC species:	25	x 3 = 75
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	65 (A)	155 (B)

Prevalence Index = B/A = 2.38

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W20A

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 - 5	10YR 4/1	100	-	-	-	-	silt	-
5 - 13	10YR 6/2	90	10YR 5/6	10	C	M	silt	black organic streaking
13 - 18	10YR 4/1	100	-	-	-	-	silt	-

[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)	___	Sandy Redox (S5)	___	1 cm Muck (A9) **(LRR C)**
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)	___	2 cm Muck (A10) **(LRR B)**
___	Black Histic (A3)	___	Loamy Mucky Mineral (F1)	___	Reduced Vertic (F18)
___	Hydrogen Sulfide (A4)	___	Loamy Gleyed Matrix (F2)	___	Red Parent Material (TF2)
___	Stratified Layers (A5) **(LRR C)**	X	Depleted Matrix (F3)	___	Other (Explain in Remarks)
___	1 cm Muck (A9) **(LRR D)**	___	Redox Dark Surface (F6)		
___	Depleted Below Dark Surface (A11)	___	Depleted Dark Surface (F7)		
___	Thick Dark Surface (A12)	___	Redox Depressions (F8)		
___	Sandy Mucky Mineral (S1)	___	Vernal Pools (F9)		
	Sandy Gleyed Matrix (S4)				

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes: X** **No:**

Remarks: Soil was saturated and did not easily hold together.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)				Secondary Indicators (2 or more required)	
___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) **(Riverine)**
X	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) **(Riverine)**
X	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) **(Riverine)**
___	Water Marks (B1) **(Nonriverine)**	___	Hydrogen Sulfide Odor (C1)	___	Drainage patterns (B10)
___	Sediment Deposits (B2) **(Nonriverine)**	___	Oxidized Rhizospheres along Living Roots	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) **(Nonriverine)**	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
	Water-Stained Leaves (B9)		Other (Explain in Remarks)		FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): 0		
Water Table Present?	Yes: X	No ___	Depth (inches): 10	**Wetland Hydrology Present?**	**Yes: X** **No:**
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0		

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W20B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369575	Northing: 4140821	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Terrace at the mouth of abandoned oxbow approximately 2 feet above the wetland sample point. Photos of site: 1013 - soil, 1014 - east, 1015 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Salix exigua	1	Y	FACW
2.			
3.			
4.			
	1	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	60	Y	FACU
2. Medicago sativa	10	N	UPL
3. Equisetum arvense	5	N	FAC
4. Poa pratensis	5	N	FAC
5. Achillea millefolium	3	N	FACU
6. Taraxacum officinale	3	N	FACU
7. Juncus arcticus	2	N	FACW
8. Mentha piperita	2	N	FACW
	90	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	5	x 2 = 10
FAC species:	10	x 3 = 30
FACU species:	66	x 4 = 264
UPL species:	10	x 5 = 50
Column Totals:	91 (A)	354 (B)

Prevalence Index = B/A = 3.89

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W20B

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 - 7	-	-	-	-	-	-	sand/gravel	-
7 - 13	10YR 6/3	100	-	-	-	-	clay	-
13 - 18	10YR 6/2	80	10YR 5/6	20	C	M	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? Yes: No: X

Remarks: Redox is not shallow enough to qualify for a Depleted Matrix (F3).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes: No: X

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W21
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): abandoned oxbow	Local relief (concave, convex, none): concave	Slope (%): 1
Subregion (LRR): D Easting: 369516	Northing: 4140821	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	
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 disturbed?	(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: No: X
Hydric Soil Present?	Yes:	No: X	
Wetland Hydrology Present?	Yes:	No: X	

Remarks: Abandoned oxbow feature off Kanab Creek. Channel is shown on the National Hydrography Dataset. Photos of site: 1016 - soil, 1017 - north, 1018 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Salix exigua	40	Y	FACW
2. Artemisia tridentata	5	N	UPL
3.			
4.			
	45	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	20	Y	FACW
2. Bromus inermis	15	Y	FACU
3. Grindelia squarrosa	10	N	FACU
4. Pascopyrum smithii	10	N	FAC
5. Poa pratensis	10	N	FAC
6. Medicago sativa	5	N	UPL
7. Distichlis spicata	TR	N	FAC
8. Taraxacum officinale	TR	N	FACU
	70	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	66.7	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	60	x 2 = 120
FAC species:	20	x 3 = 60
FACU species:	25	x 4 = 100
UPL species:	10	x 5 = 50
Column Totals:	115 (A)	330 (B)

Prevalence Index = B/A = 2.87

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Remnant wetland vegetation in an abandoned oxbow channel. Kanab Creek does not flow through area anymore.

SOILS

Sampling Point: W21

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 - 4	10YR 4/2	100	-	-	-	-	sandy loam	-
4 - 8	10YR 5/2	70	10YR 5/6	30	C	M	clay	-
8	Restrictive Layer	100	-	-	-	-	gravel	-

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Gravel

Depth (inches): 8

Hydric Soil Present? **Yes:** **No: X**

Remarks: The site does not meet hydric characteristics, the redox layer in the soil is not thick enough to qualify as a Depleted Matrix.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable, site is an abandoned feature that is higher in elevation than Kanab Creek. No evidence of recent flow.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W22A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): concave	Slope (%): 2
Subregion (LRR): D — Easting: 369578	Northing: 4140949	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Backwater wetland off of Kanab Creek. Photos of site: 1019 - soil, 1020 - south, 1021 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	50	Y	FACW
2. Eleocharis palustris	30	Y	OBL
3. Epilobium sp.	5	N	-
4. Medicago sativa	3	N	UPL
5. Iris missouriensis	1	N	FACW
6. Typha latifolia	1	N	OBL
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	31	x 1=	31
FACW species:	51	x 2 =	102
FAC species:		x 3 =	0
FACU species:		x 4 =	0
UPL species:	3	x 5 =	15
Column Totals:	85 (A)		148 (B)

Prevalence Index = B/A = 1.74

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W22A

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 - 18	10YR 5/2	100	-	-	-	-	sand	gravel pieces and organic materials

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: No redox present, sandy deposition. At 8 inches there is a fine gravel layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ____	No X	Depth (inches): ____	
Water Table Present?	Yes: X	No ____	Depth (inches): 6	**Wetland Hydrology Present?** **Yes: X** **No:**
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Adequate wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W22B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): bench	Local relief (concave, convex, none): convex	Slope (%): 1
Subregion (LRR): D — Easting: 369575	Northing: 4140949	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Upland gravel bar in the Kanab Creek drainage. Approximately 18 inches higher in elevation than the adjacent wetland sample point. Photos of site: 1022 - soil and 1023 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Medicago sativa	2	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	2	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover: 0			

% Bare Ground in Herb Stratum 98 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:	2	x 5 = 10
Column Totals:	2 (A)	10 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Mostly unvegetated area. The vegetation is upland.

SOILS

Sampling Point: W22B

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 - 18	-	100		-	-	-	gravel/sand	cobble

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Gravel/sand/cobble no soil development

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. Sample point is higher than the adjacent wetland sample point and likely only receives hydrology during high flow events.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W23A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369761	Northing: 4141506	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Kanab Creek floodplain. Photos of site: 1027 - soil, 1028 - west, 1029 - southwest

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	73	Y	FACW
2. Eleocharis sp.	15	N	-
3. Bromus inermis	10	N	FACU
4. Iris missouriensis	2	N	FACW
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	75	x 2 = 150
FAC species:		x 3 = 0
FACU species:	10	x 4 = 40
UPL species:		x 5 = 0
Column Totals:	85 (A)	190 (B)

Prevalence Index = B/A = 2.24

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland vegetation community.

SOILS

Sampling Point: W23A

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 - 18	10YR 5/2	85	10YR 5/6	15	C	M	clay	black organic streaking 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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: X No Depth (inches): 0

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturated to the surface.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W23B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 5
Subregion (LRR): D	Easting: 369756	Northing: 4141505	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Hillslope out of the wetlands adjacent to Kanab Creek. Sample point is approximately 18 inches above the wetland sample point. Photos of site: 1030 - soil and 1031 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	10	Y	UPL
2. Symphoricarpos albus	5	Y	FACU
3. Rosa woodsii	5	Y	FACU
4.			
	20	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Pascopyrum smithii	40	Y	FAC
2. Poa pratensis	20	Y	FAC
3. Medicago sativa	10	N	UPL
4. Achillea millefolium	5	N	FACU
5. Equisetum hyemale	2	N	FACW
6. Cirsium sp.	TR	N	-
7. Vicia villosa	TR	N	UPL
8.			
	77	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 23 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	40	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	2	x 2 =	4
FAC species:	60	x 3 =	180
FACU species:	15	x 4 =	60
UPL species:	20	x 5 =	100
Column Totals:	97 (A)		344 (B)

Prevalence Index = B/A = 3.55

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Uplant plant community.

SOILS

Sampling Point: W23B

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 - 18	10YR 5/3	100	-	-	-	-	clay loam	very fine granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. Higher in elevation than the adjacent wetland.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W24A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 2
Subregion (LRR): D	Easting: 369614	Northing: 4141279	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Kanab Creek floodplain. Sample point is approximately 1.5 feet away from flowing water of Kanab Creek. Photos of site: 1038 - soil, 1039 - southwest, 1040 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	55	Y	FACW
2. Bromus inermis	15	N	FACU
3. Poa pratensis	15	N	FAC
4. Equisetum arvense	TR	N	FAC
5. Equisetum hyemale	TR	N	FACW
6. Achillea millefolium	TR	N	FACU
7. Taraxacum officinale	TR	N	FACU
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	55	x 2 = 110
FAC species:	15	x 3 = 45
FACU species:	15	x 4 = 60
UPL species:		x 5 = 0
Column Totals:	85 (A)	215 (B)

Prevalence Index = B/A = 2.53

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Wetland plant community.

SOILS

Sampling Point: W24A

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 - 15	10YR 5/2	80	10YR 5/6	20	C	M	sandy clay	black sulfide streaks
15 - 18	-	-	-	-	-	-	Gravel	-

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ___ No X Depth (inches): ___

Water Table Present? Yes: ___ No X Depth (inches): ___

Saturation Present? (incl. capillary fringe) Yes: X No Depth (inches): 15

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil column was moist throughout but not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W24B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 2
Subregion (LRR): D Easting: 369612	Northing: 4141282	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Low terrace of Kanab Creek. The sample point is approximately 12 inches above the wetland sample point. Photos of site: 1036 - soil and 1037 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia nova	15	Y	UPL
2. Artemisia tridentata	10	Y	UPL
3.			
4.			
	25	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	25	Y	FACU
2. Medicago sativa	5	N	UPL
3. Equisetum hyemale	3	N	FACW
4.			
5.			
6.			
7.			
8.			
	33	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 67 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	3	x 2 = 6
FAC species:		x 3 = 0
FACU species:	25	x 4 = 100
UPL species:	30	x 5 = 150
Column Totals:	58 (A)	256 (B)

Prevalence Index = B/A = 4.41

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland vegetation community.

SOILS

Sampling Point: W24B

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 - 10	-	100	-	-	-	-	sand/gravel/	cobble

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Gravel/cobble

Depth (inches): 10

Hydric Soil Present? **Yes:** **No: X**

Remarks: No evidence of hydric conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No _X_ Depth (inches): ____

Water Table Present? Yes: ____ No _X_ Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W25A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369718	Northing: 4141356	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Kanab Creek floodplain. Sample point is approximately 8 inches away from flowing water of Kanab Creek. Photos of site: 1042 - soil, 1043 - southwest, 1044 - northeast.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Eleocharis palustris	20	Y	OBL
2. Poa pratensis	20	Y	FAC
3. Juncus arcticus	10	N	FACW
4. Juncus mexicanus	10	N	FACW
5.			
6.			
7.			
8.			
	60	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	20	x 1=	20
FACW species:	20	x 2 =	40
FAC species:	20	x 3 =	60
FACU species:		x 4 =	0
UPL species:		x 5 =	0
Column Totals:	60 (A)		120 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W25A

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 - 5	10YR 5/2	100	10YR 5/6	20	C	M	clay	black organic streaking
5 - 12	10YR 5/1	100	10YR 5/6	20	C	M	clay	gravel present
12	Restrictive Layer	-	-	-	-	-	gravel	-

[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 C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Gravel

Depth (inches): 12

Hydric Soil Present? **Yes: X** **No:**

Remarks: At 5 inches there is gravel mixed into the clay.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: ___	No X	Depth (inches): ___	
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W25B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 24, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369721	Northing: 4141353	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: High point on an upland peninsula approximately 12 inches above the wetland adjacent to Kanab Creek. Photos of site: 1045 - soil and 1046 - northwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus osteosperma	30	Y	UPL
2. Pinus edulis	30	Y	UPL
3.			
4.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Symphoricarpos albus	15	Y	FACU
2. Artemisia tridentata	10	Y	UPL
3. Quercus gambelii	10	Y	UPL
4.			
	35	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Poa pratensis	8	Y	FAC
2. Pascopyrum smithii	4	Y	FAC
3. Achillea millefolium	1	N	FACU
4. Equisetum hyemale	TR	N	FACW
5.			
6.			
7.			
8.			
	13	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 87 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	28.6	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	12	x 3 = 36
FACU species:	16	x 4 = 64
UPL species:	80	x 5 = 400
Column Totals:	108 (A)	500 (B)

Prevalence Index = B/A = 4.63

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W25B

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 18	-	100	-	-	-	-	Sand/Gravel	Cobble

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No soil development. Sand/Gravel/Cobble.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Sample pit is moist. No evidence of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W26A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369873	Northing: 4141765	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Kanab Creek floodplain. Sample point is approximately 25 feet away from low flow channel of Kanab Creek. Photos of site: 1049 - soil, 1050 - south, 1051 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Eleocharis palustris	50	Y	OBL
2. Juncus arcticus	45	Y	FACW
3. Equisetum hyemale	2	N	FACW
4. Triglochin maritima	TR	N	OBL
5.			
6.			
7.			
8.			
	97	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 3 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	50	x 1=	50
FACW species:	47	x 2 =	94
FAC species:		x 3 =	0
FACU species:		x 4 =	0
UPL species:		x 5 =	0
Column Totals:	97 (A)		144 (B)

Prevalence Index = B/A = 1.48

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W26A

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 - 7	10YR 5/2	85	10YR 5/6	15	C	M	clay	-
7 - 15	10YR 5/2	50	-	-	-	-	clay	-
"	Gley 1 2.5/N	50	-	-	-	-	clay	-
15	Restrictive Layer	-	-	-	-	-	gravel	-

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Gravel

Depth (inches): 15

Hydric Soil Present? Yes: X No:

Remarks: Strong hydrogen sulfide smell

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 15	**Wetland Hydrology Present?** Yes: X No:
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Wetland conditions present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W26B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 0
Subregion (LRR): D	Easting: 369866	Northing: 4141764	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Terrace approximately 12 inches above wetland sample point. Photos of site: 1052 - soil, 1054 - east, 1053 - Iris with Sagebrush.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus osteosperma	10	Y	UPL
2.			
3.			
4.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia nova	35	Y	UPL
2. Artemisia tridentata	5	N	UPL
3. Rosa woodsii	1	N	FACU
4.			
	41	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Medicago sativa	15	Y	UPL
2. Poa pratensis	15	Y	FAC
3. Pascopyrum smithii	5	N	FAC
4. Distichlis spicata	5	N	FAC
5. Achillea millefolium	2	N	FACU
6. Plantago eriopoda	TR	N	FACW
7.			
8.			
	42	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 58 % Cover of Biotic Crust

Dominance Test Worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	25	x 3 = 75
FACU species:	3	x 4 = 12
UPL species:	65	x 5 = 325
Column Totals:	93 (A)	412 (B)

Prevalence Index = B/A = 4.43

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W26B

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	10YR 4/3	100	-	-	-	-	sand	gravels present
14	Restrictive Layer	100	-	-	-	-	sand/gravel	-

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Gravel

Depth (inches): 14

Hydric Soil Present? **Yes:** **No: X**

Remarks: Crumbly. No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No _X_ Depth (inches): ____

Water Table Present? Yes: ____ No _X_ Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist, not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W27A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D Easting: 369957	Northing: 4141883	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Kanab Creek floodplain. Sample point is approximately 6 feet away and 10 inches above the low flow channel of Kanab Creek. Photos of site: 1057 - soil, 1058 - northeast, 1059 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	65	Y	FACW
2. Eleocharis palustris	30	Y	OBL
3. Carex praegracilis	5	N	FACW
4. Iris missouriensis	TR	N	FACW
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:	30	x 1= 30
FACW species:	70	x 2 = 140
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	100 (A)	170 (B)

Prevalence Index = B/A = 1.70

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Wetland plant community.

SOILS

Sampling Point: W27A

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 - 9	Gley 1 2.5/N	50	10YR 5/6	10	C	M	clay	-
"	10YR 5/2	30	-	-	-	-	"	-
"	10YR 6/3	10	-	-	-	-	"	-
9 - 18	-	100	-	-	-	-	sand/gravel	-

[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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 10	**Wetland Hydrology Present?** **Yes: X** **No:**
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W27B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 5
Subregion (LRR): D	Easting: 369960	Northing: 4141880	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Hillslope adjacent to wetlands around Kanab Creek. Photos of site: 1060 - soil and 1061 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Chrysothamnus nauseosus	20	Y	UPL
2.			
3.			
4.			
	20	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	30	Y	FACW
2. Medicago sativa	30	Y	UPL
3. Poa pratensis	15	N	FAC
4. Achillea millefolium	5	N	FACU
5. Taraxacum officinale	2	N	FACU
6.			
7.			
8.			
	82	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 18 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	30	x 2 =	60
FAC species:	15	x 3 =	45
FACU species:	7	x 4 =	28
UPL species:	50	x 5 =	250
Column Totals:	102 (A)		383 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W27B

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 - 18	10YR 5/4	100	-	-	-	-	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? Yes: No: X

Remarks: No redox present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

Wetland Hydrology Present? Yes: No: X

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W28A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 370042	Northing: 4142110	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Approximately 12 inches above the elevation of the flowing water in Kanab Creek and 3 feet to the west. Photos of site: 1066 - soil, 1067 - east, 1068 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1. Elaeagnus angustifolia	5	Y	FAC
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Rosa woodsii	5	Y	FACU
2.			
3.			
4.			
	5	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	35	Y	FACW
2. Juncus mexicanus	10	N	FACW
3. Phleum pratense	10	N	FACU
4. Iris missouriensis	3	N	FACW
5. Carex sp.	2	N	-
6. Plantago erlopoda	TR	N	FACW
7.			
8.			
	60	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	48	x 2 = 96
FAC species:	5	x 3 = 15
FACU species:	15	x 4 = 60
UPL species:		x 5 = 0
Column Totals:	68 (A)	171 (B)

Prevalence Index = B/A = 2.51

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W28A

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 - 18	10YR 5/2	70	10YR 4/6	30	C	M	clay	black organic streaking 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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Black, organic decaying material present along with course gravel and sand mixed throughout the column.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 7	**Wetland Hydrology Present?** **Yes: X** **No:**
Saturation Present? (Incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W28B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 370037	Northing: 4142105	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Approximately 2 feet higher in elevation than the adjacent wetland sample point. Photos of site: 1069 - soil and 1070 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia nova	15	Y	UPL
2. Artemisia tridentata	15	Y	UPL
3.			
4.			
	30	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Medicago sativa	25	Y	UPL
2. Poa pratensis	10	Y	FAC
3. Achillea millefolium	5	N	FACU
4. Juncus arcticus	5	N	FACW
5.			
6.			
7.			
8.			
	45	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 55 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	5	x 2 = 10
FAC species:	10	x 3 = 30
FACU species:	5	x 4 = 20
UPL species:	55	x 5 = 275
Column Totals:	75 (A)	335 (B)

Prevalence Index = B/A = 4.47

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W28B

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 - 18	-	100	-	-	-	-	sand/gravel	no soil development

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W29A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 15
Subregion (LRR): D	Easting: 369968	Northing: 4142148	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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:
Hydric Soil Present?	Yes: X	No:
Wetland Hydrology Present?	Yes: X	No:

Is the Sampled Area within a Wetland? **Yes: X** **No:**

Remarks: Hillslope seep area. Photos of site: 1072 - soil, 1073 - north, 1074 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	55	Y	FACW
2. Distichlis spicata	10	N	FAC
3. Plantago eriopoda	10	N	FACW
4. Triglochin maritima	10	N	OBL
5. Carex sp.	5	N	-
6. Carex praegracilis	5	N	FACW
7. Juncus mexicanus	5	N	FACW
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:	10	x 1= 10
FACW species:	75	x 2 = 150
FAC species:	10	x 3 = 30
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	95 (A)	190 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W29A

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 - 18	Gley 1 5/10Y	60	-	-	-	-	clay	-
"	10YR 5/6	40	-	-	-	-	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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Organic material and gravel found throughout column.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ___ No X Depth (inches): ___

Water Table Present? Yes: ___ No X Depth (inches): ___

Saturation Present? (incl. capillary fringe) Yes: X No Depth (inches): 0

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

\WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W29B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 15
Subregion (LRR): D	Easting: 369963	Northing: 4142143	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Hillslope above the wetland seep area. Approximately 4 feet above the wetland sample point. Photos of site: 1075 - soil and 1076 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	40	Y	UPL
2.			
3.			
4.			
	40	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	45	Y	FACW
2. Achillea millefolium	10	N	FACU
3. Medicago sativa	TR	N	UPL
4.			
5.			
6.			
7.			
8.			
	55	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	45	x 2 = 90
FAC species:		x 3 = 0
FACU species:	10	x 4 = 40
UPL species:	40	x 5 = 200
Column Totals:	95 (A)	330 (B)

Prevalence Index = B/A = 3.47

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W29B

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 - 18	10YR 4/2	100	-	-	-	-	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox present. White calcium carbonate nodules present below 10 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: May 24, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W30
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 18, 39S, 5W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D Easting: 370127	Northing: 4142333	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Within Ordinary High Water Mark of Kanab Creek. Approximately 3 feet west of the low-flow channel and 3 inches higher in elevation. Photos of site: 1084 - soil and 1085 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Medicago sativa	7	Y	UPL
2. Carex praegracilis	3	Y	FACW
3. Juncus arcticus	3	Y	FACW
4. Bromus inermis	1	N	FACU
5.			
6.			
7.			
8.			
	14	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover: 0			

% Bare Ground in Herb Stratum 86 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	66.7	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	6	x 2 = 12
FAC species:		x 3 = 0
FACU species:	1	x 4 = 4
UPL species:	7	x 5 = 35
Column Totals:	14 (A)	51 (B)

Prevalence Index = B/A = 3.64

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:

SOILS

Sampling Point: W30

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 18	-	100	-	-	-	-	sand/gravel	-

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: No soil development. Within active floodplain of Kanab Creek.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No _X_ Depth (inches): ____

Water Table Present? Yes: ____ No _X_ Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 4, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W31A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): blocked drainage	Local relief (concave, convex, none): concave	Slope (%): >1
Subregion (LRR): D	Easting: 369671	Northing: 4143268	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Man-made livestock pond that blocks an upland drainage swale and captures upland runoff from hillslope to west. Has historically held water and appears to be transitioning to drier conditions. Photos of site: 1119 - soil, 1120 - south, 1121 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Hordeum jubatum	20	Y	FAC
2. Xanthium strumarium	13	Y	FAC
3. Medicago sativa	5	N	UPL
4. Lactuca serriola	5	N	FACU
5. Convolvulus arvensis	5	N	UPL
6. Chenopodium sp.	2	N	-
7. Bromus inermis	2	N	FACU
8. Agropyron cristatum	TR	N	UPL
	52	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 48 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	33	x 3 = 99
FACU species:	7	x 4 = 28
UPL species:	10	x 5 = 50
Column Totals:	50 (A)	177 (B)

Prevalence Index = B/A = 3.54

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W31A

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 - 5	2.5Y 6/2	90	2.5Y 5/2	10	C	M	clay	crumbly, angular
5 - 18	2.5Y 5/6	80	10YR 5/2	20	C	M	clay	crumbly, angular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 4, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W31B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D	Easting: 369673	Northing: 4143276	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: On the terrace above the man-made pond. Approximately 2 feet higher in elevation than the wetland sample point. Photos of site: 1122 - soil, 1123 - south, 1124 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Melilotus officinalis	35	Y	FACU
2. Agropyron cristatum	15	Y	UPL
3. Poa pratensis	5	N	FAC
4.			
5.			
6.			
7.			
8.			
	55	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:		x 2 =	0
FAC species:	5	x 3 =	15
FACU species:	35	x 4 =	140
UPL species:	15	x 5 =	75
Column Totals:	55 (A)		230 (B)

Prevalence Index = B/A = 4.18

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W31B

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 - 18	10YR 5/2	100	-	-	-	-	clay	fine granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W32A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage bottom	Local relief (concave, convex, none): concave	Slope (%): 1
Subregion (LRR): D	Easting: 369106	Northing: 4142479	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Adjacent to drainage bottom, no defined channel. Photos of site: 1130 - soil, 1131 - north, 1132 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Triglochin maritima	35	Y	OBL
2. Eleocharis palustris	15	Y	OBL
3. Juncus arcticus	15	Y	FACW
4. Carex praegracilis	5	N	FACW
5.			
6.			
7.			
8.			
	70	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:	50	x 1= 50
FACW species:	20	x 2 = 40
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	70 (A)	90 (B)

Prevalence Index = B/A = 1.29

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W32A

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 - 6	Gley 1 2.5/N	100	-	-	-	-	clay	-
6 - 18	10YR 5/1	80	10YR 5/6	20	C	M	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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Alkali powder on surface

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___		
Water Table Present?	Yes: X	No ___	Depth (inches): 14	**Wetland Hydrology Present?**	**Yes: X** **No:**
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 10		

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Flowing water on the surface approximately 12 inches to the west, no channel indicators present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W32B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 10
Subregion (LRR): D	Easting: 369113	Northing: 4142480	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Hillslope adjacent to drainage bottom. Approximately 3 feet above the wetland sample point. Photos of site: 1133 - soil, 1134 - west, 1135 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	10	Y	UPL
2.			
3.			
4.			
	10	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Melilotus officinalis	45	Y	FACU
2. Bromus inermis	15	Y	FACU
3. Thinopyrum intermedium	10	N	UPL
4. Achillea millefolium	5	N	FACU
5.			
6.			
7.			
8.			
	75	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:		x 3 = 0
FACU species:	65	x 4 = 260
UPL species:	20	x 5 = 100
Column Totals:	85 (A)	360 (B)

Prevalence Index = B/A = 4.24

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W32B

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C)**
- ____ 1 cm Muck (A9) **(LRR D)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR C)**
- ____ 2 cm Muck (A10) **(LRR B)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) **(Nonriverine)**
- ____ Sediment Deposits (B2) **(Nonriverine)**
- ____ Drift Deposits (B3) **(Nonriverine)**
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) **(Riverine)**
- ____ Sediment Deposits (B2) **(Riverine)**
- ____ Drift Deposits (B3) **(Riverine)**
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W33A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 2
Subregion (LRR): D	Easting: 369012	Northing: 4142559	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Adjacent to intermittent stream channel above the ordinary high water mark on the terrace. Photos of site: 1136 - soil, 1137 - southeast, 1138 - southwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Salix exigua	5	Y	FACW
2. Chrysothamnus nauseosus	2	Y	UPL
3. Artemisia tridentata	TR	N	UPL
4.			
	7	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	80	Y	FACW
2. Hordeum jubatum	13	N	FAC
3. Poa palustris	5	N	FAC
4. Eleocharis palustris	2	N	OBL
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	66.7	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	2	x 1=	2
FACW species:	85	x 2 =	170
FAC species:	18	x 3 =	54
FACU species:		x 4 =	0
UPL species:	2	x 5 =	10
Column Totals:	107 (A)		236 (B)

Prevalence Index = B/A = 2.21

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W33A

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 - 6	10YR 5/2	90	10YR 5/6	10	C	M	clay	-
6 - 18	10YR 4/1	80	10YR 5/6	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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Black streaking present below 6 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ___ No X Depth (inches): ___

Water Table Present? Yes: ___ No X Depth (inches): ___

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W33B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 30
Subregion (LRR): D	Easting: 369007	Northing: 4142556	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Located on the hillslope approximately 2 feet above the wetland sample point. Opposite bank has evidence of slumping and seepage. Photos of site: 1139 - soil and 1140 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	35	Y	UPL
2. Chrysothamnus nauseosus	5	N	UPL
3. Salix exigua	5	N	FACW
4. Rosa woodsii	2	N	FACU
	47	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	60	Y	FACU
2. Achillea millefolium	5	N	FACU
3. Juncus arcticus	5	N	FACW
4. Melilotus officinalis	2	N	FACU
5.			
6.			
7.			
8.			
	72	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 28 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	10	x 2 =	20
FAC species:		x 3 =	0
FACU species:	69	x 4 =	276
UPL species:	40	x 5 =	200
Column Totals:	119 (A)		496 (B)

Prevalence Index = B/A = 4.17

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W33B

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W34A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 2
Subregion (LRR): D Easting: 369217	Northing: 4142612	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	
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 disturbed?	(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: Wetland area adjacent to intermittent stream channel. Photos of site: 1141 - soil, 1142 - south, 1143 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Hordeum jubatum	40	Y	FAC
2. Juncus arcticus	30	Y	FACW
3. Carex praegracilis	20	Y	FACW
4. Carex sp.	5	N	-
5. Poa pratensis	5	N	FAC
6. Eleocharis palustris	2	N	OBL
7.			
8.			
	102	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:	2	x 1= 2
FACW species:	50	x 2 = 100
FAC species:	45	x 3 = 135
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	97 (A)	237 (B)

Prevalence Index = B/A = 2.44

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Wetland plant community.

SOILS

Sampling Point: W34A

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 - 9	10YR 4/2	98	10YR 5/6	2	C	M	clay	densely rooted
9 - 18	10YR 4/1	90	10YR 5/6	10	C	M	clay	calcium carbonate nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W34B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 15
Subregion (LRR): D	Easting: 369222	Northing: 4142607	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Located on a hillslope adjacent to wetland, approximately 18 inches higher than the wetland sample point. Photos of site: 1144 - soil, 1145 - north, 1146 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Rosa woodsii	7	Y	FACU
2. Artemisia tridentata	3	Y	UPL
3.			
4.			
	10	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	35	Y	FACU
2. Melilotus officinalis	15	Y	FACU
3. Achillea millefolium	10	N	FACU
4. Juncus arcticus	5	N	FACW
5. Thinopyrum intermedium	5	N	UPL
6. Poa pratensis	2	N	FAC
7.			
8.			
	72	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 28 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	5	x 2 = 10
FAC species:	2	x 3 = 6
FACU species:	67	x 4 = 268
UPL species:	8	x 5 = 40
Column Totals:	82 (A)	324 (B)

Prevalence Index = B/A = 3.95

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W34B

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C)**
- ____ 1 cm Muck (A9) **(LRR D)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR C)**
- ____ 2 cm Muck (A10) **(LRR B)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) **(Nonriverine)**
- ____ Sediment Deposits (B2) **(Nonriverine)**
- ____ Drift Deposits (B3) **(Nonriverine)**
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) **(Riverine)**
- ____ Sediment Deposits (B2) **(Riverine)**
- ____ Drift Deposits (B3) **(Riverine)**
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Powdery dry and friable. Approximately 18 inches above the wetland.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W35A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369201	Northing: 4143123	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wetland area adjacent to intermittent stream channel. Photos of site: 1147 - soil, 1148 - south, 1149 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	65	Y	FACW
2. Triglochin maritima	20	Y	OBL
3. Juncus sp.	10	N	-
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	20	x 1=	20
FACW species:	65	x 2 =	130
FAC species:		x 3 =	0
FACU species:		x 4 =	0
UPL species:		x 5 =	0
Column Totals:	85 (A)		150 (B)

Prevalence Index = B/A = 1.76

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W35A

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 - 5	2.5Y 5/2	80	10YR 5/6	20	C	M	clay	black streaking
5 - 15	Gley 1 2.5/N	90	10YR 5/6	10	C	M	clay	-
15 - 18	10YR 5/1	60	10YR 5/6	40	C	M	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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 15	
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Alkali powder on the suface.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W35B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 65
Subregion (LRR): D	Easting: 369196	Northing: 4143122	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Sample point is approximately 3 feet above the wetland sample point. Photos of site: 1150 - soil, 1151 - north, 1152 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	20	Y	UPL
2. Rosa woodsii	5	Y	FACU
3. Chrysothamnus nauseosus	TR	N	UPL
4.			
	25	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	60	Y	FACU
2. Juncus arcticus	15	Y	FACW
3. Cirsium sp.	TR	N	-
4.			
5.			
6.			
7.			
8.			
	75	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	15	x 2 =	30
FAC species:		x 3 =	0
FACU species:	65	x 4 =	260
UPL species:	20	x 5 =	100
Column Totals:	100 (A)		390 (B)

Prevalence Index = B/A = 3.90

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W35B

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. Approximately 3 feet above the wetland.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W36A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368884	Northing: 4142823	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Intermittent stream channel above the ordinary high water mark, approximately 2 feet above and 5 feet east of the channel bottom. Photos of site: 1153 - soil, 1154 - northwest, 1155 - northeast.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	90	Y	FACW
2. Hordeum jubatum	5	N	FAC
3. Poa pratensis	2	N	FAC
4. Achillea millefolium	1	N	FACU
5. Melilotus officinalis	1	N	FACU
6. Chenopodium sp.	1	N	-
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	90	x 2 = 180
FAC species:	7	x 3 = 21
FACU species:	2	x 4 = 8
UPL species:		x 5 = 0
Column Totals:	99 (A)	209 (B)

Prevalence Index = B/A = 2.11

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W36A

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 - 5	10YR 5/2	100	-	-	-	-	clay	-
5 - 18	10YR 4/1	98	10YR 5/6	2	C	M	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil was moist. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W36B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): base of hillslope	Local relief (concave, convex, none): none	Slope (%): 10
Subregion (LRR): D	Easting: 368884	Northing: 4142831	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Base of hillslope at the edge of channel bottom, approximately 12 inches higher than the adjacent wetland sample point. Photos of site: 1156 - soil, 1157 - southeast, 1158 - southwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	10	Y	UPL
2.			
3.			
4.			
	10	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Achillea millefolium	35	Y	FACU
2. Juncus arcticus	15	Y	FACW
3. Bromus inermis	10	N	FACU
4. Melilotus officinalis	10	N	FACU
5. Poa pratensis	5	N	FAC
6.			
7.			
8.			
	75	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	15	x 2 = 30
FAC species:	5	x 3 = 15
FACU species:	55	x 4 = 220
UPL species:	10	x 5 = 50
Column Totals:	85 (A)	315 (B)

Prevalence Index = B/A = 3.71

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W36B

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 - 18	10YR 4/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? Yes: No: X

Remarks: Red fragments of native stone present. No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes: No: X

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W37A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 2
Subregion (LRR): D	Easting: 368747	Northing: 4143012	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Sample point is adjacent to intermittent stream channel below reservior. Photos of site: 1159 - soil, 1160 - southeast, 1161 - northwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Carex nebrascensis	95	Y	OBL
2. Carex sp.	3	N	-
3. Carex praegracilis	TR	N	FACW
4.			
5.			
6.			
7.			
8.			
	98	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:	95	x 1= 95
FACW species:		x 2 = 0
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	95 (A)	95 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W37A

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 - 18	10YR 4/1	90	10YR 5/6	10	C	M	clay	black organic streaking

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: Dense root matter throughout the column.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist. It is assumed that early season water levels are sufficient to support wetland conditions. Wetland is below reservoir.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W37B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 13, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 15
Subregion (LRR): D	Easting: 368741	Northing: 4143012	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Located on hillslope above the drainage floor approximately 18 inches above the wetland sample point. Photos of site: 1162 - soil and 1163 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1. Artemisia tridentata	10	Y	UPL
2.			
3.			
4.			
	10	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Achillea millefolium	20	Y	FACU
2. Melilotus officinalis	20	Y	FACU
3. Thinopyrum intermedium	20	Y	UPL
4. Juncus arcticus	10	N	FACW
5. Medicago sativa	5	N	UPL
6. Poa pratensis	5	N	FAC
7. Agropyron cristatum	5	N	UPL
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	10	x 2 =	20
FAC species:	5	x 3 =	15
FACU species:	40	x 4 =	160
UPL species:	40	x 5 =	200
Column Totals:	95 (A)		395 (B)

Prevalence Index = B/A = 4.16

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W37B

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Native red stone material found throughout the column. No redox observed. Calcium carbonate nodules present throughout the column.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No _X_ Depth (inches): ____

Water Table Present? Yes: ____ No _X_ Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry. Higher in elevation than the wetland sample point.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W38A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 4
Subregion (LRR): D	Easting: 368733	Northing: 4143270	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Groundwater surfacing in the area and draining towards the reservoir, no defined channel. Photos of site: 1164 - soil, 1165 - soil, 1166 - northwest, 1167 - southeast.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	100	x 2 = 200
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	100 (A)	200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W38A

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 - 18	Gley 1 2.5/N	100	-	-	-	-	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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 4	**Wetland Hydrology Present?** **Yes: X** **No:**
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W38B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 10
Subregion (LRR): D Easting: 368729	Northing: 4143275	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	
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 disturbed?	(If needed, explain any answers in Remarks.)	

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

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

Remarks: Transitional area impacted by upgradient groundwater surfacing. Photos of site: 1168 - soil and 1169 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Thinopyrum intermedium	55	Y	UPL
2. Poa pratensis	30	Y	FAC
3. Juncus arcticus	5	N	FACW
4. Plantago eriopoda	3	N	FACW
5.			
6.			
7.			
8.			
	93	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 7 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	8	x 2 = 16
FAC species:	30	x 3 = 90
FACU species:		x 4 = 0
UPL species:	55	x 5 = 275
Column Totals:	93 (A)	381 (B)

Prevalence Index = B/A = 4.10

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W38B

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 - 18	10YR 4/1	100	-	-	-	-	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed. Calcium carbonate nodules present in the column. Dense roots and rocks also present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable to 4 inches and moist below that, not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W39A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 2
Subregion (LRR): D	Easting: 368651	Northing: 4143264	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Hillslope drainage area seep. It appears the boundary line has been established for agricultural uses. Photos of site: 1177 - soil, 1178 - south, 1179 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	90	Y	FACW
2. Carex sp.	5	N	-
3. Juncus sp.	5	N	-
4. Juncus sp.	TR	N	-
5. Thinopyrum intermedium	TR	N	UPL
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	90	x 2 =	180
FAC species:		x 3 =	0
FACU species:		x 4 =	0
UPL species:		x 5 =	0
Column Totals:	90 (A)		180 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W39A

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 - 18	Gley 1 2.5/N	100	-	-	-	-	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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 15	
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Groundwater seepage area.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W39B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 2
Subregion (LRR): D	Easting: 368647	Northing: 4143265	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Area has been tilled and replanted for agriculture. Photos of site: 1180 - soil and 1181 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Melilotus officinalis	40	Y	FACU
2. Bromus inermis	20	Y	FACU
3. Agropyron cristatum	10	N	UPL
4. Helianthus annuus	5	N	FACU
5.			
6.			
7.			
8.			
	75	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:		x 3 = 0
FACU species:	65	x 4 = 260
UPL species:	10	x 5 = 50
Column Totals:	75 (A)	310 (B)

Prevalence Index = B/A = 4.13

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W39B

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W40A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 2
Subregion (LRR): D	Easting: 368519	Northing: 4143293	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wetland drainage swale, no defined channel. Photos of site: 1182 - soil, 1183 - northwest, 1184 - southwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	60	Y	FACW
2. Carex praegracilis	40	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	100	x 2 = 200
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	100 (A)	200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W40A

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 - 18	10YR 3/2	90	10YR 5/6	10	C	M	clay	granular

[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 C)**
- ____ 1 cm Muck (A9) **(LRR D)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR C)**
- ____ 2 cm Muck (A10) **(LRR B)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) **(Nonriverine)**
- ____ Sediment Deposits (B2) **(Nonriverine)**
- ____ Drift Deposits (B3) **(Nonriverine)**
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) **(Riverine)**
- ____ Sediment Deposits (B2) **(Riverine)**
- ____ Drift Deposits (B3) **(Riverine)**
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W40B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 5
Subregion (LRR): D	Easting: 368518	Northing: 4143289	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: On the hillslope near the top of the terrace. Approximately 3 feet above the wetland sample point. Photos of site: 1185 - soil and 1186 - northeast.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Melilotus officinalis	40	Y	FACU
2. Achillea millefolium	15	Y	FACU
3. Bromus tectorum	10	N	UPL
4. Helianthus annuus	1	N	FACU
5.			
6.			
7.			
8.			
	66	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 34 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:		x 3 = 0
FACU species:	56	x 4 = 224
UPL species:	10	x 5 = 50
Column Totals:	66 (A)	274 (B)

Prevalence Index = B/A = 4.15

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W40B

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? Yes: No: X

Remarks: No redox observed. Soil appears to be worked.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes: No: X

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W41A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D Easting: 368559	Northing: 4143393	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	
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 disturbed?	(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: Located in a wetland drainage swale, no defined channel. Photos of site: 1187 - pit, 1188 - soil, 1189 - northeast, 1190 - northwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	40	Y	FACW
2. Carex nebrascensis	20	Y	OBL
3. Carex praegracilis	20	Y	FACW
4. Phleum pratense	10	N	FACU
5. Poa pratensis	10	N	FAC
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	20	x 1=	20
FACW species:	60	x 2 =	120
FAC species:	10	x 3 =	30
FACU species:	10	x 4 =	40
UPL species:		x 5 =	0
Column Totals:	100 (A)		210 (B)

Prevalence Index = B/A = 2.10

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W41A

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 - 18	10YR 4/1	100	-	-	-	-	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.)

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Mostly decaying root material and organics, minimal amount of soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 8	**Wetland Hydrology Present?** **Yes: X** **No:**
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W41B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace hillslope	Local relief (concave, convex, none): none	Slope (%): 10
Subregion (LRR): D	Easting: 368563	Northing: 4143391	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Located on hillslope adjacent to wetland. Approximately 18 inches above the wetland sample point. Photos of site: 1191 - soil and 1192 - southwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	15	Y	UPL
2.			
3.			
4.			
	15	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	30	Y	FACW
2. Achillea millefolium	20	Y	FACU
3. Poa pratensis	20	Y	FAC
4. Melilotus officinalis	10	N	FACU
5. Thinopyrum intermedium	10	N	UPL
6. Cirsium sp.	TR	N	-
7. Taraxacum officinale	TR	N	FACU
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover: 0			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	30	x 2 = 60
FAC species:	20	x 3 = 60
FACU species:	30	x 4 = 120
UPL species:	25	x 5 = 125
Column Totals:	105 (A)	365 (B)

Prevalence Index = B/A = 3.48

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W41B

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No _X_ Depth (inches): ____

Water Table Present? Yes: ____ No _X_ Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W42A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D Easting: 368568	Northing: 4143485	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Trampled by livestock. Photos of site: 1193 - soil, 1194 - north, 1195 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	50	Y	FACW
2. Eleocharis palustris	30	Y	OBL
3. Carex nebrascensis	15	N	OBL
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:	45	x 1=	45
FACW species:	50	x 2 =	100
FAC species:		x 3 =	0
FACU species:		x 4 =	0
UPL species:		x 5 =	0
Column Totals:	95 (A)		145 (B)

Prevalence Index = B/A = 1.53

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community. Grazed upon by livestock.

SOILS

Sampling Point: W42A

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 - 5	10YR 5/2	100	-	-	-	-	clay	-
5 - 18	Gley 1 2.5/N	100	-	-	-	-	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)
- X Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) **(LRR C)**
- ____ 1 cm Muck (A9) **(LRR D)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR C)**
- ____ 2 cm Muck (A10) **(LRR B)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: Soil is saturated and trampled by livestock.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) **(Riverine)**
- ____ Sediment Deposits (B2) **(Riverine)**
- ____ Drift Deposits (B3) **(Riverine)**
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: X No ___ Depth (inches): 1

Water Table Present? Yes: X No ___ Depth (inches): ___

Saturation Present? (incl. capillary fringe) Yes: X No Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface water present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W42B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 5
Subregion (LRR): D	Easting: 368564	Northing: 4143485	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Sample point is approximately 18 inches above wetland sample point. Photos of site: 1196 - soil and 1197 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus osteosperma	15	Y	UPL
2.			
3.			
4.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Rosa woodsii	15	Y	FACU
2.			
3.			
4.			
	15	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	40	Y	FACW
2. Poa pratensis	20	Y	FAC
3. Melilotus officinalis	15	N	FACU
4. Achillea millefolium	5	N	FACU
5. Agropyron cristatum	5	N	UPL
6. Bromus inermis	5	N	FACU
7. Bromus tectorum	5	N	UPL
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	40	x 2 = 80
FAC species:	20	x 3 = 60
FACU species:	40	x 4 = 160
UPL species:	25	x 5 = 125
Column Totals:	125 (A)	425 (B)

Prevalence Index = B/A = 3.40

Hydrophytic Vegetation Indicators:

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

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

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

Remarks:

SOILS

Sampling Point: W42B

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No _X_ Depth (inches): ____

Water Table Present? Yes: ____ No _X_ Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 5, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W43A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368517	Northing: 4143573	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wetland drainage swale. Photos of site: 1198 - soil, 1199 - north, 1200 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	35	Y	FACW
2. Carex nebrascensis	30	Y	OBL
3. Eleocharis palustris	20	Y	OBL
4. Carex praegracilis	10	N	FACW
5. Mentha piperita	5	N	FACW
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:	50	x 1= 50
FACW species:	50	x 2 = 100
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	100 (A)	150 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Wetland plant community.

SOILS

Sampling Point: W43A

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 - 18	10YR 4/1	100	-	-	-	-	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)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Pit is mostly fibric material, minimal soil development. No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: X	No ___	Depth (inches): 5	
Saturation Present? (incl. capillary fringe)	Yes: X	No	Depth (inches): 0	

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: -

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W43B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 3
Subregion (LRR): D	Easting: 368518	Northing: 4143576	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Hillslope off upland terrace. Approximately 18 inches above the wetland sample point. Photos of site: 1201 - soil and 1202 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Melilotus officinalis	35	Y	FACU
2. Juncus arcticus	30	Y	FACW
3. Carex praegracilis	10	N	FACW
4. Poa pratensis	10	N	FAC
5. Thinopyrum intermedium	10	N	UPL
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	40	x 2 =	80
FAC species:	10	x 3 =	30
FACU species:	35	x 4 =	140
UPL species:	10	x 5 =	50
Column Totals:	95 (A)		300 (B)

Prevalence Index = B/A = 3.16

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W43B

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed. Densely compacted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No _X_ Depth (inches): ____

Water Table Present? Yes: ____ No _X_ Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist, not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W44A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage floor	Local relief (concave, convex, none): none	Slope (%): 3
Subregion (LRR): D	Easting: 368636	Northing: 4143464	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wetland drainage swale, no channel present. Photos of site: 1203 - soil, 1204 - west, 1205 - north, 1206 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Carex praegracilis	55	Y	FACW
2. Juncus arcticus	35	Y	FACW
3. Poa sp.	10	N	-
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	90	x 2 = 180
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	90 (A)	180 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W44A

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 - 8	10YR 5/2	98	10YR 5/6	2	C	M	clay	densely rooted
8 - 18	10YR 5/1	95	10YR 5/6	5	C	M	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: Densely compacted

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W44B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 5
Subregion (LRR): D	Easting: 368630	Northing: 4143469	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Hillslope that is potential groundwater seepage area. Photos of site: 1207 - soil and 1208 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	35	Y	FACW
2. Carex praegracilis	20	Y	FACW
3. Melilotus officinalis	20	Y	FACU
4. Plantago major	10	N	FAC
5. Achillea millefolium	5	N	FACU
6. Taraxacum officinale	2	N	FACU
7.			
8.			
	92	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 8 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	66.7	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	55	x 2 = 110
FAC species:	10	x 3 = 30
FACU species:	27	x 4 = 108
UPL species:		x 5 = 0
Column Totals:	92 (A)	248 (B)

Prevalence Index = B/A = 2.70

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W44B

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 - 7	10YR 5/2	98	10YR 5/6	2	C	M	clay	root material
7 - 18	10YR 7/1	90	10YR 5/6	10	C	M	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Moist, not saturated. Potential groundwater seepage on terrace. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W44C
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D Easting: 368324	Northing: 4143473	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Terrace outside of drainage and the seepage area influence. Photos of site: 1209 - soil, 1210 - east, 1211 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus osteosperma	5	Y	UPL
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Melilotus officinalis	25	Y	FACU
2. Achillea millefolium	20	Y	FACU
3. Poa pratensis	20	Y	FAC
4. Juncus arcticus	10	N	FACW
5. Bromus tectorum	5	N	UPL
6. Chenopodium sp.	5	N	-
7. Thinopyrum intermedium	3	N	UPL
8. Bromus inermis	2	N	FACU
	90	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	10	x 2 =	20
FAC species:	20	x 3 =	60
FACU species:	47	x 4 =	188
UPL species:	13	x 5 =	65
Column Totals:	90 (A)		333 (B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W44C

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C)**
- ____ 1 cm Muck (A9) **(LRR D)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR C)**
- ____ 2 cm Muck (A10) **(LRR B)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? Yes: No: X

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) **(Nonriverine)**
- ____ Sediment Deposits (B2) **(Nonriverine)**
- ____ Drift Deposits (B3) **(Nonriverine)**
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) **(Riverine)**
- ____ Sediment Deposits (B2) **(Riverine)**
- ____ Drift Deposits (B3) **(Riverine)**
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

Wetland Hydrology Present? Yes: No: X

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. Soil was moist at 15 inches, not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W45
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage swale	Local relief (concave, convex, none): none	Slope (%): 2
Subregion (LRR): D	Easting: 368640	Northing: 4143639	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: In bottom of drainage swale. Photos of site: 1216 - soil, 1217 - south, 1218 - north, 1219 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Carex praegracilis	50	Y	FACW
2. Juncus arcticus	40	Y	FACW
3. Hordeum jubatum	TR	N	FAC
4.			
5.			
6.			
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	90	x 2 = 180
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	90 (A)	180 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W45

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 - 18	10YR 5/2	90	10YR 5/6	10	C	M	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: Soil held together with the high amount of clay. Calcium concretion nodules present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry. Alkali powder on surface. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W46
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage swale	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368643	Northing: 4143673	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: No: X
Hydric Soil Present?	Yes:	No: X	
Wetland Hydrology Present?	Yes:	No: X	

Remarks: Located in a drainage swale. Photos of site: 1220 - soil, 1221 - west, 1222 - south, 1223 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	25	Y	FACW
2. Melilotus officinalis	25	Y	FACU
3. Poa pratensis	20	Y	FAC
4. Achillea millefolium	10	N	FACU
5. Thinopyrum intermedium	5	N	UPL
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	66.7	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	25	x 2 = 50
FAC species:	20	x 3 = 60
FACU species:	35	x 4 = 140
UPL species:	5	x 5 = 25
Column Totals:	85 (A)	275 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Marginal wetland plant community.

SOILS

Sampling Point: W46

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 - 18	10YR 5/3	99	10YR 5/6	>1	C	M	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Marginal redox that is faint and minimal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W47
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage swale	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368639	Northing: 4143579	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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:
Hydric Soil Present?	Yes: X	No:
Wetland Hydrology Present?	Yes: X	No:

Is the Sampled Area within a Wetland? **Yes: X** **No:**

Remarks: Drainage swale that is heavily grazed by livestock. Photos of site: 1224 - soil, 1225 - west, 1226 - south, 1227 - north, 1228 - vegetation.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Poa pratensis	15	Y	FAC
2. Carex praegracilis	10	Y	FACW
3. Juncus arcticus	10	Y	FACW
4. Medicago sativa	10	Y	UPL
5. Symphyotrichum ascendens	10	Y	FAC
6. Thinopyrum intermedium	5	N	UPL
7.			
8.			
	60	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	80	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	20	x 2 = 40
FAC species:	25	x 3 = 75
FACU species:		x 4 = 0
UPL species:	15	x 5 = 75
Column Totals:	60 (A)	190 (B)

Prevalence Index = B/A = 3.17

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Marginal wetland plant community that only passes the dominance test.

SOILS

Sampling Point: W47

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	10YR 5/2	100	-	-	-	-	clay	granular
3 - 18	10YR 5/2	97	10YR 5/6	3	C	M	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Located in drainage immediately above a headcut. Soil column was dry and friable. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W48
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage swale	Local relief (concave, convex, none): concave	Slope (%): 2
Subregion (LRR): D	Easting: 368642	Northing: 4143529	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Located in a drainage swale that has headcuts upstream and downstream. Area is heavily grazed. Photos of site: 1229 - soil and 1230 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	10	Y	UPL
2.			
3.			
4.			
	10	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	25	Y	FACU
2. Juncus arcticus	20	Y	FACW
3. Poa pratensis	15	N	FAC
4. Achillea millefolium	5	N	FACU
5. Melilotus officinalis	5	N	FACU
6. Symphyotrichum ascendens	5	N	FAC
7. Thinopyrum intermedium	2	N	UPL
8.			
	77	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 23 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	20	x 2 = 40
FAC species:	20	x 3 = 60
FACU species:	35	x 4 = 140
UPL species:	12	x 5 = 60
Column Totals:	87 (A)	300 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W48

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 - 8	10YR 4/2	99	10YR 5/6	>1	C	M	clay	granular
8 - 12	10YR 4/2	100	-	-	-	-	clay	no redox, granular
12 - 18	10YR 5/2	95	10YR 5/6	5	C	M	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: The redox is either too minimal or too deep in the column to meet hydric conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W49A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368661	Northing: 4143747	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wet meadow below an alfalfa field. Photos of site: 1234 - soil, 1235 - east, 1236 - northeast.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	70	Y	FACW
2. Poa pratensis	10	N	FAC
3. Symphyotrichum ascendens	10	N	FAC
4. Carex praegracilis	5	N	FACW
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	75	x 2 = 150
FAC species:	20	x 3 = 60
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	95 (A)	210 (B)

Prevalence Index = B/A = 2.21

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W49A

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 - 3	-	-	-	-	-	-	organics	fibrous root zone
3 - 16	10YR 5/2	65	10YR 5/6	15	C	M, PL	clay	granular, 20% calcium nodules

[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 C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: No soil in the top 3 inches of the column, just organic material. Calcium concretion nodules account for 20% of the column below 3 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ___ No X Depth (inches): ___

Water Table Present? Yes: ___ No X Depth (inches): ___

Saturation Present? (incl. capillary fringe) Yes: ___ No X Depth (inches): ___

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W49B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368670	Northing: 4143743	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Located in transitional area from wet meadow to sagebrush/juniper upland area. Photos of site: 1137 - soil, 1138 - west, 1139 - southwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Polygonum douglasii	45	Y	FACU
2. Chenopodium album	35	Y	FACU
3. Poa secunda	5	N	FACU
4. Poa pratensis	2	N	FAC
5.			
6.			
7.			
8.			
	87	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 13 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	2	x 3 = 6
FACU species:	85	x 4 = 340
UPL species:		x 5 = 0
Column Totals:	87 (A)	346 (B)

Prevalence Index = B/A = 3.98

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W49B

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 - 7	10YR 4/2	100	-	-	-	-	clay	granular
7 - 16	10YR 5/2	90	-	-	-	-	clay	10% calcium nodules
16 - 18	10YR 5/2	89	10YR 5/6	>1	C	M	clay	10% calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Redox is located too deep in the column to meet hydric characteristics.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W50A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368697	Northing: 4143801	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Drainage swale depression off of irrigated agriculture field. Photos of site: 1241 - soil, 1242 - west, 1243 - southwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Poa pratensis	50	Y	FAC
2. Hordeum jubatum	30	Y	FAC
3. Medicago sativa	5	N	UPL
4. Melilotus officinalis	TR	N	FACU
5.			
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	80	x 3 = 240
FACU species:		x 4 = 0
UPL species:	5	x 5 = 25
Column Totals:	85 (A)	265 (B)

Prevalence Index = B/A = 3.12

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Marginal wetland plant community.

SOILS

Sampling Point: W50A

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 - 5	10YR 4/2	90	-	-	-	-	clay	no redox, 10% calcium nodules
5 - 16	10YR 5/2	60	10YR 5/6	30	C	M	clay	10% calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil was moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W50B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): agriculture field terrace	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368685	Northing: 4143805	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Approximately 6 - 8 inches higher in elevation than the adjacent wetland sample point. Located in an alfalfa field. Photos of site: 1244 - soil and 1245 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Medicago sativa	90	Y	UPL
2. Poa sp.	5	N	-
3.			
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover: 0			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:	90	x 5 = 450
Column Totals:	90 (A)	450 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community. Planted alfalfa field.

SOILS

Sampling Point: W50B

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 - 18	10YR 4/2	97	10YR 5/6	>1	C	M	clay	granular, >2% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W51A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): agriculture field terrace	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368595	Northing: 4143848	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Alfalfa field. Photos of site: 1252 - soil and 1253 - southwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Medicago sativa	80	Y	UPL
2. Bromus inermis	15	N	FACU
3. Lactuca serriola	5	N	FACU
4. Chenopodium album	TR	N	FACU
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:		x 2 =	0
FAC species:		x 3 =	0
FACU species:	20	x 4 =	80
UPL species:	80	x 5 =	400
Column Totals:	100 (A)		480 (B)

Prevalence Index = B/A = 4.80

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W51A

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 - 8	10YR 3/1	100	-	-	-	-	clay loam	till zone
8 - 18	10YR 4/2	75	10YR 5/6	25	C	M	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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist, not saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W51B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368582	Northing: 4143821	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wet meadow downgradient of alfalfa field. Photos of site: 1254 - soil, 1255 - west, 1256 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	75	Y	FACW
2. Poa pratensis	15	N	FAC
3. Symphyotrichum ascendens	10	N	FAC
4. Cirsium sp.	1	N	-
5. Pascopyrum smithii	TR	N	FAC
6. Lactuca serriola	TR	N	FACU
7.			
8.			
	101	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	75	x 2 = 150
FAC species:	25	x 3 = 75
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	100 (A)	225 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W51B

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 - 2	-	-	-	-	-	-	organics	fibrous material
2 - 10	10YR 5/1	50	73.5YR 4/6	50	C	M	clay	granular
10 - 18	7.5YR 4/1	80	7.5YR 4/6	20	C	M	clay	compacted

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W51C
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368565	Northing: 4143835	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Meadow area that has a vegetation break from wetland to the east. Photos of site: 1257 - soil, 1258 - east, 1259 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Pascopyrum smithii	55	Y	FAC
2. Poa pratensis	15	N	FAC
3. Juncus arcticus	10	N	FACW
4. Juncus sp.	5	N	-
5. Symphyotrichum ascendens	5	N	FAC
6. Carex praegracilis	2	N	FACW
7.			
8.			
	92	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 8 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	12	x 2 = 24
FAC species:	75	x 3 = 225
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	87 (A)	249 (B)

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W51C

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 - 1	-	-	-	-	-	-	organics	fibrous root zone
1 - 2	10YR 3/2	88	10YR 5/6	>2	C	M	clay	granular, 10% white calcium nodules
2 - 16	10YR 4/1	70	7.5YR 4/6	30	C	M	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W51D
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 368530	Northing: 4143862	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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:** **No: X**
Hydric Soil Present?	Yes:	No: X	
Wetland Hydrology Present?	Yes:	No: X	

Remarks: Upland meadow that is heavily grazed by livestock. Approximately 12 inches higher than adjacent wetland sample point. Photos of site: 1060 - soil and 1061 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Pascopyrum smithii	40	Y	FAC
2. Poa pratensis	15	Y	FAC
3. Achillea millefolium	5	N	FACU
4.			
5.			
6.			
7.			
8.			
	60	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	55	x 3 = 165
FACU species:	5	x 4 = 20
UPL species:		x 5 = 0
Column Totals:	60 (A)	185 (B)

Prevalence Index = B/A = 3.08

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Marginal wetland plant community that passes only the dominance test.

SOILS

Sampling Point: W51D

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 - 9	10YR 5/2	100	-	-	-	-	clay	granular
9 - 18	10YR 5/2	95	-	-	-	-	clay	granular, 5% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W52
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): valley bottom	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369654	Northing: 4143587	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: No: X
Hydric Soil Present?	Yes:	No: X	
Wetland Hydrology Present?	Yes:	No: X	

Remarks: Meadow area on the valley bottom. Photos of site: 1268 - soil and 1269 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Rosa woodsii	10	Y	FACU
2.			
3.			
4.			
	10	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	30	Y	FACW
2. Poa pratensis	25	Y	FAC
3. Achillea millefolium	10	N	FACU
4. Fescue sp.	10	N	-
5. Juncus mexicanus	5	N	FACW
6. Thinopyrum intermedium	5	N	UPL
7. Symphyotrichum ascendens	5	N	FAC
8. Tragopogon dubius	2	N	UPL
	92	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 8 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	66.7	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	35	x 2 =	70
FAC species:	30	x 3 =	90
FACU species:	20	x 4 =	80
UPL species:	7	x 5 =	35
Column Totals:	92 (A)		275 (B)

Prevalence Index = B/A = 2.99

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Wetland plant community.

SOILS

Sampling Point: W52

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 - 0.5	-	-	-	-	-	-	organics	Fibrous root material
0.5 - 10	10YR 5/2	100	-	-	-	-	clay	granular
10 - 18	10YR 4/1	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed. Does not meet hydric conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ____	No ____	Depth (inches):	X
Water Table Present?	Yes: ____	No ____	Depth (inches):	X
Saturation Present? (incl. capillary fringe)	Yes:	No	Depth (inches):	X

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. Vegetation was stressed from what appears to be lack of water.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W53A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 3
Subregion (LRR): D	Easting: 369236	Northing: 4143493	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Potential seepage area. Photos of site: 1273 - soil, 1274 - west, 1275 - northeast.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1. Elaeagnus angustifolia	10	Y	FAC
2.			
3.			
4.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	70	Y	FACW
2. Symphyotrichum ascendens	15	N	FAC
3. Medicago sativa	5	N	UPL
4. Thinopyrum intermedium	2	N	UPL
5.			
6.			
7.			
8.			
	92	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 8 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	70	x 2 = 140
FAC species:	25	x 3 = 75
FACU species:		x 4 = 0
UPL species:	7	x 5 = 35
Column Totals:	102 (A)	250 (B)

Prevalence Index = B/A = 2.45

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W53A

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 - 6	10YR 4/2	25	-	-	-	-	loam	75% fibrous root material
6 - 18	10YR 4/1	75	10YR 5/6	25	C	M	clay	blocky

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: Mixed profile appears to be result of slumping.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil was moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W53B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 10
Subregion (LRR): D	Easting: 369228	Northing: 4143500	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Located on a hillslope into drainage. Approximately 5 feet above the adjacent wetland sample point. Photos of site: 1276 - soil and 1277 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1. Elaeagnus angustifolia	5	Y	FAC
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	10	Y	UPL
2.			
3.			
4.			
	10	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Thinopyrum intermedium	45	Y	UPL
2. Agropyron cristatum	15	Y	UPL
3. Medicago sativa	10	N	UPL
4. Symphyotrichum ascendens	10	N	FAC
5. Carex praegracilis	TR	N	FACW
6.			
7.			
8.			
	80	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust

Dominance Test Worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	15	x 3 = 45
FACU species:		x 4 = 0
UPL species:	80	x 5 = 400
Column Totals:	95 (A)	445 (B)

Prevalence Index = B/A = 4.68

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W53B

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 - 18	10YR 5/2	95	-	-	-	-	clay	granular, 5% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W54A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow terrace	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369233	Northing: 4143550	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	
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 disturbed? (If needed, explain any answers in Remarks.)		

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

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

Remarks: Upland meadow area outside of drainage swale. Photos of site: 1282 - soil, 1283 - west, 1285 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: ____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Thinopyrum intermedium	45	Y	UPL
2. Pascopyrum smithii	30	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	75	= Total Cover	
Woody Vine Stratum (Plot Size: ____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust ____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:	____	x 1= 0
FACW species:	____	x 2 = 0
FAC species:	30	x 3 = 90
FACU species:	____	x 4 = 0
UPL species:	45	x 5 = 225
Column Totals:	75 (A)	315 (B)

Prevalence Index = B/A = 4.20

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W54A

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 - 18	10YR 5/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W54B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369262	Northing: 4143564	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Hummock area in a meadow. Photos of site: 1287 - soil, 1288 - west, 1289 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Thinopyrum intermedium	55	Y	UPL
2. Carex praegracilis	20	Y	FACW
3. Pascopyrum smithii	10	N	FAC
4.			
5.			
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	20	x 2 = 40
FAC species:	10	x 3 = 30
FACU species:		x 4 = 0
UPL species:	55	x 5 = 275
Column Totals:	85 (A)	345 (B)

Prevalence Index = B/A = 4.06

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W54B

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 - 18	10YR 4/2	75	10YR 5/6	>1	C	M	clay	granular, 25% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? Yes: No: X

Remarks: Redox is faint and not in high enough concentration to qualify for hydric conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

Wetland Hydrology Present? Yes: No: X

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 6, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W54C
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage swale	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369240	Northing: 4143569	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Drainage swale that does not have a defined channel. Photos of site: 1290 - soil, 1291 - south, 1292 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Carex praegracilis	60	Y	FACW
2. Juncus arcticus	20	Y	FACW
3. Poa pratensis	10	N	FAC
4. Pascopyrum smithii	TR	N	FAC
5.			
6.			
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	80	x 2 = 160
FAC species:	10	x 3 = 30
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	90 (A)	190 (B)

Prevalence Index = B/A = 2.11

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W54C

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	10YR 4/1	90	10YR 5/6	10	C	M	clay	granular
5 - 18	10YR 4/1	70	10YR 5/6	25	C	M	clay	granular, 5% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry. It is assumed that early season water levels are sufficient to support wetland conditions in the topographically lower swale.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W55A
Investigator(s): Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): swale	Local relief (concave, convex, none): concave	Slope (%): 2
Subregion (LRR): D	Easting: 369096	Northing: 4143524	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Located in a drainage swale, no defined channel associated with swale. Photos of site: 1308 - soil, 1309 - north, 1310 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Carex praegracilis	50	Y	FACW
2. Juncus arcticus	45	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	95	x 2 = 190
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	95 (A)	190 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W55A

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	10YR 4/2	20	-	-	-	-	organics	80% fibrous root material
3 - 18	10YR 4/1	80	10YR 5/6	20	C	M	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: Tightly compacted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry. It is assumed that early season water levels are sufficient to support wetland conditions in the topographically lower swale.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W55B
Investigator(s): Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D	Easting: 369094	Northing: 4143519	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Grazed area located approximately 12 inches above the adjacent wetland sample point. Photos of site: 1311 - soil and 1312 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Artemisia tridentata	35	Y	UPL
2.			
3.			
4.			
	35	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	30	Y	FACU
2. Agropyron cristatum	10	Y	UPL
3. Iva axillaris	10	Y	FAC
4. Thinopyrum intermedium	10	Y	UPL
5. Fescue sp.	5	N	-
6. Juncus arcticus	2	N	FACW
7.			
8.			
	67	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 33 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	20	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	2	x 2 = 4
FAC species:	10	x 3 = 30
FACU species:	30	x 4 = 120
UPL species:	55	x 5 = 275
Column Totals:	97 (A)	429 (B)

Prevalence Index = B/A = 4.42

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W55B

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 - 5	10YR 5/3	100	-	-	-	-	clay	granular
5 - 18	10YR 3/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W56A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage bottom	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D Easting: 368984	Northing: 4143744	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	
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 disturbed?	(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: Adjacent to agriculture field of alfalfa, located near drainage bottom. Photos of site: 1317 - soil, 1318 - north, 1319 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Poa palustris	45	Y	FAC
2. Hordeum jubatum	20	Y	FAC
3. Polygonum aviculare	15	N	FACW
4. Medicago sativa	5	N	UPL
5.			
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	15	x 2 = 30
FAC species:	65	x 3 = 195
FACU species:		x 4 = 0
UPL species:	5	x 5 = 25
Column Totals:	85 (A)	250 (B)

Prevalence Index = B/A = 2.94

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes: X No:

Remarks: Wetland plant community.

SOILS

Sampling Point: W56A

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 - 5	10YR 5/2	99	10YR 5/6	>1	C	M	clay	granular
5 - 18	10YR 5/2	88	10YR 5/6	2	C	M	clay	granular, 10% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil was moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W56B
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 5
Subregion (LRR): D	Easting: 368978	Northing: 4143739	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Located on a hillslope in an alfalfa field. Photos of site: 1320 - soil and 1321 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Medicago sativa	40	Y	UPL
2. Polygonum douglasii	20	Y	FACU
3. Hordeum jubatum	10	N	FAC
4. Melilotus officinalis	5	N	FACU
5. Poa palustris	2	N	FAC
6.			
7.			
8.			
	77	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 23 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	12	x 3 = 36
FACU species:	25	x 4 = 100
UPL species:	40	x 5 = 200
Column Totals:	77 (A)	336 (B)

Prevalence Index = B/A = 4.36

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W56B

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 - 8	10YR 5/1	99	10YR 5/6	>1	C	M	clay	granular
8 - 18	10YR 5/3	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: No redox below 8 inches. Between 6 inches and 8 inches there is the presence of the white calcium concretion nodules.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Moist. Surface soil cracks are likely from the pivot irrigation for the alfalfa.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W57A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369043	Northing: 4143843	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wet meadow adjacent to alfalfa field. Photos of site: 1322 - soil, 1323 - north, 1324 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	45	Y	FACW
2. Carex praegracilis	40	Y	FACW
3. Poa pratensis	10	N	FAC
4. Symphyotrichum ascendens	7	N	FAC
5. Medicago sativa	3	N	UPL
6. Taraxacum officinale	TR	N	FACU
7.			
8.			
	105	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	85	x 2 = 170
FAC species:	17	x 3 = 51
FACU species:		x 4 = 0
UPL species:	3	x 5 = 15
Column Totals:	105 (A)	236 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W57A

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 - 3	-	-	-	-	-	-	organics	fibrous root material
3 - 18	10YR 5/2	50	7.5YR 5/6	50	C	M	clay	granular

[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)	___	Sandy Redox (S5)	___	1 cm Muck (A9) (**LRR C**)
___	Histic Epipedon (A2)	___	Stripped Matrix (S6)	___	2 cm Muck (A10) (**LRR B**)
___	Black Histic (A3)	___	Loamy Mucky Mineral (F1)	___	Reduced Vertic (F18)
___	Hydrogen Sulfide (A4)	___	Loamy Gleyed Matrix (F2)	___	Red Parent Material (TF2)
___	Stratified Layers (A5) (**LRR C**)	X	Depleted Matrix (F3)	___	Other (Explain in Remarks)
___	1 cm Muck (A9) (**LRR D**)	___	Redox Dark Surface (F6)		
___	Depleted Below Dark Surface (A11)	___	Depleted Dark Surface (F7)		
___	Thick Dark Surface (A12)	___	Redox Depressions (F8)		
___	Sandy Mucky Mineral (S1)	___	Vernal Pools (F9)		
	Sandy Gleyed Matrix (S4)				

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

___	Surface Water (A1)	___	Salt Crust (B11)	___	Water Marks (B1) (**Riverine**)
___	High Water Table (A2)	___	Biotic Crust (B12)	___	Sediment Deposits (B2) (**Riverine**)
___	Saturation (A3)	___	Aquatic Invertebrates (B13)	___	Drift Deposits (B3) (**Riverine**)
___	Water Marks (B1) (**Nonriverine**)	___	Hydrogen Sulfide Odor (C1)	___	Drainage patterns (B10)
___	Sediment Deposits (B2) (**Nonriverine**)	___	Oxidized Rhizospheres along Living Roots	___	Dry-Season Water Table (C2)
___	Drift Deposits (B3) (**Nonriverine**)	___	Presence of Reduced Iron (C4)	___	Crayfish Burrows (C8)
___	Surface Soil Cracks (B6)	___	Recent Iron Reduction in Plowed Soils (C6)	___	Saturation Visible on Aerial Imagery (C9)
___	Inundation Visible on Aerial Imagery (B7)	___	Thin Muck Surface (C7)	___	Shallow Aquitard (D3)
	Water-Stained Leaves (B9)		Other (Explain in Remarks)		FAC-Neutral Test (D5)

Secondary Indicators (2 or more required)

Field Observations:

Surface Water Present?	Yes: ___	No X	Depth (inches): ___	
Water Table Present?	Yes: ___	No X	Depth (inches): ___	
Saturation Present? (incl. capillary fringe)	Yes:	No X	Depth (inches):	

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil was moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W57B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): agriculture field	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369042	Northing: 4143855	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Located in an alfalfa field. Photos of site: 1325 - soil and 1326 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Medicago sativa	90	Y	UPL
2. Bromus inermis	5	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:		x 3 = 0
FACU species:	5	x 4 = 20
UPL species:	90	x 5 = 450
Column Totals:	95 (A)	470 (B)

Prevalence Index = B/A = 4.95

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W57B

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 - 6	10YR 4/2	100	-	-	-	-	clay loam	granular, till zone
6 - 18	10YR 3/1	70	7.5YR 5/8	30	C	M	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No root pore linings present. There is no redox present in the top 6 inches of the soil profile and the darker colored layer exceeds past the 12 inches below the surface so the soil does not contain hydric characteristics.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W58A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage swale	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369133	Northing: 4143587	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Drainage swale off of wetland meadow. Photo of site: 1328 - soil, 1329 - south, 1330 - east, 1331 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Carex praegracilis	50	Y	FACW
2. Juncus arcticus	15	N	FACW
3. Hordeum jubatum	TR	N	FAC
4.			
5.			
6.			
7.			
8.			
	65	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	65	x 2 = 130
FAC species:		x 3 = 0
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	65 (A)	130 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W58A

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 - 6.5	10YR 4/2	98	-	-	-	-	silty loam	granular, 2% white calcium nodules
6.5 - 18	10YR 5/2	85	10YR 5/6	10	C	M	clay	granular, 5% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W58B
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369138	Northing: 4143573	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Dry drainage swale below the wetland sample point. Trampled and grazed. Photos of site: 1332 - soil, 1333 - north, 1334 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Poa secunda	30	Y	FACU
2. Hordeum jubatum	5	N	FAC
3. Polygonum douglasii	5	N	FACU
4.			
5.			
6.			
7.			
8.			
	40	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	5	x 3 = 15
FACU species:	35	x 4 = 140
UPL species:		x 5 = 0
Column Totals:	40 (A)	155 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W58B

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 - 15	10YR 5/2	100	-	-	-	-	clay	-
15 - 18	10YR 4/2	95	-	-	-	-	clay	5% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (Inches): ____

Water Table Present? Yes: ____ No X Depth (Inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (Inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. Surface cracks in the soil, this area does not meet the other wetland criteria and it does not fall within a basin system so it is assumed that these are temporary ponding circumstances and not indicative of wetlands.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W59A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369195	Northing: 4143658	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wet meadow area. Photos of site: 1335 - soil, 1336 - east, 1337 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	40	Y	FACW
2. Carex praegracilis	35	Y	FACW
3. Poa pratensis	10	N	FAC
4. Medicago sativa	5	N	UPL
5. Plantago eriopoda	5	N	FACW
6. Symphyotrichum ascendens	5	N	FAC
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	80	x 2 =	160
FAC species:	15	x 3 =	45
FACU species:		x 4 =	0
UPL species:	5	x 5 =	25
Column Totals:	100 (A)		230 (B)

Prevalence Index = B/A = 2.30

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W59A

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 - 2	-	-	-	-	-	-	organics	fibrous root zone
2 - 18	10YR 4/2	90	10YR 5/6	10	C	M	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes: ____	No X	Depth (inches): ____	
Water Table Present?	Yes: ____	No X	Depth (inches): ____	**Wetland Hydrology Present?** **Yes: X** **No:**
Saturation Present? (incl. capillary fringe)	Yes:	No X	Depth (inches):	

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W59B
Investigator(s): Jeff Bolce, Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369204	Northing: 4143657	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Outside of the drainage swale. Area is heavily grazed by livestock. Photos of site: 1338 - soil and 1339 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Poa secunda	40	Y	FACU
2. Thinopyrum intermedium	15	N	UPL
3. Hordeum jubatum	TR	N	FAC
4.			
5.			
6.			
7.			
8.			
	55	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:		x 2 =	0
FAC species:		x 3 =	0
FACU species:	40	x 4 =	160
UPL species:	15	x 5 =	75
Column Totals:	55 (A)		235 (B)

Prevalence Index = B/A = 4.27

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W59B

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 - 18	10YR 4/2	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Below 6.5 inches there is approximately 2% of the soil column that is the white calcium nodules.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist, not saturated. Surface cracks in the soil, this area does not meet the other wetland criteria and it does not fall within a basin system so it is assumed that these are temporary ponding circumstances and not indicative of wetlands.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W60A
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage bottom	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369180	Northing: 4143324	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Located in drainage bottom. Area is disturbed for a construction and maintenance access crossing, located adjacent to elk fence. Photos of site: 1340 - soil, 1341 - south, 1342 - north, 1343 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Hordeum jubatum	10	Y	FAC
2. Xanthium strumarium	3	N	FAC
3. Juncus arcticus	TR	N	FACW
4.			
5.			
6.			
7.			
8.			
	13	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 87 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	13	x 3 = 39
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	13 (A)	39 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Minimal wetland plant community coverage.

SOILS

Sampling Point: W60A

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 - 7	10YR 5/3	99	10YR 5/6	>1	C	M	clay	granular
7 - 18	10YR 5/2	90	10YR 5/6	10	C	M	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist, not saturated. Located in drainage bottom. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W60B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace	Local relief (concave, convex, none): none	Slope (%): 3
Subregion (LRR): D	Easting: 369173	Northing: 4143322	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Man-made crossing for construction and maintenance access of the elk fence. Approximately 3 feet higher than the adjacent wetland sample point. Photos of site: 1344 - soil, 1345 - east, 1346 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 6' x 6')			
1. Chrysothamnus nauseosus	5	Y	UPL
2.			
3.			
4.			
	5	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Bromus inermis	25	Y	FACU
2. Melilotus officinalis	20	Y	FACU
3. Hordeum jubatum	10	N	FAC
4. Elymus elymoides	2	N	FACU
5. Dactylis glomerata	1	N	FACU
6.			
7.			
8.			
	58	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 42 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	10	x 3 = 30
FACU species:	48	x 4 = 192
UPL species:	5	x 5 = 25
Column Totals:	63 (A)	247 (B)

Prevalence Index = B/A = 3.92

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W60B

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 - 18	10YR 5/3	100	-	-	-	-	clay	granular

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W61A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): drainage	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369311	Northing: 4143615	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Drainage area. Photos of site: 1347 - soil, 1348 - west, 1349 - southwest.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Carex praegracilis	60	Y	FACW
2. Juncus arcticus	5	N	FACW
3. Pascopyrum smithii	5	N	FAC
4. Thinopyrum intermedium	5	N	UPL
5.			
6.			
7.			
8.			
	75	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	65	x 2 =	130
FAC species:	5	x 3 =	15
FACU species:		x 4 =	0
UPL species:	5	x 5 =	25
Column Totals:	75 (A)		170 (B)

Prevalence Index = B/A = 2.27

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W61A

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 - 5	10YR 5/2	85	10YR 5/6	5	C	M	clay loam	granular, 10% white calcium nodules
5 - 18	10YR 5/2	78	10YR 5/6	2	C	M	clay	granular, 20% white calcium nodules

[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 C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 Soil Present? **Yes: X** **No:**

Remarks: Redox is higher density and prominent in the top layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ___ No X Depth (inches): ___

Water Table Present? Yes: ___ No X Depth (inches): ___

Saturation Present? (incl. capillary fringe) Yes: ___ No X Depth (inches): ___

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W61B
Investigator(s): Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): terrace meadow	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D	Easting: 369301	Northing: 4143614	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Upland meadow area that is heavily grazed. Photos of site: 1350 - soil, 1351 - north, 1352 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Thinopyrum intermedium	65	Y	UPL
2. Pascopyrum smithii	20	Y	FAC
3. Carex praegracilis	5	N	FACW
4.			
5.			
6.			
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:	5	x 2 =	10
FAC species:	20	x 3 =	60
FACU species:		x 4 =	0
UPL species:	65	x 5 =	325
Column Totals:	90 (A)		395 (B)

Prevalence Index = B/A = 4.39

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Upland plant community.

SOILS

Sampling Point: W61B

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 - 18	10YR 3/2	93	10YR 5/6	5	C	M	clay	granular, 2% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: The soil layer with redox is not entirely located within the upper 12 inches, it extends down to 18 inches, of the column which means it does not meet the F7 criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. No indications of hydrology present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W62A
Investigator(s): Jeff Boice, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D	Easting: 369242	Northing: 4143681	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wet meadow area. Grazed by livestock. Photos of site: 1353 - soil, 1354 - east, 1355 - south.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Carex praegracilis	65	Y	FACW
2. Plantago lanceolata	15	N	FAC
3. Juncus arcticus	10	N	FACW
4. Medicago sativa	4	N	UPL
5. Iris missouriensis	2	N	FACW
6. Thinopyrum intermedium	2	N	UPL
7.			
8.			
	98	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	77	x 2 = 154
FAC species:	15	x 3 = 45
FACU species:		x 4 = 0
UPL species:	6	x 5 = 30
Column Totals:	98 (A)	229 (B)

Prevalence Index = B/A = 2.34

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W62A

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 - 18	10YR 5/2	83	10YR 5/6	2	C	M	clay	granular, 15% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W62B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow terrace	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D — Easting: 369250	Northing: 4143684	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Meadow area that is heavily grazed. Approximately 6 inches higher in elevation than the adjacent wetland sample point. Photos of site: 1356 - west and 1357 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Poa secunda	35	Y	FACU
2. Achillea millefolium	20	Y	FACU
3. Medicago sativa	10	N	UPL
4. Symphyotrichum ascendens	5	N	FAC
5. Poa pratensis	2	N	FAC
6.			
7.			
8.			
	72	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 28 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	7	x 3 = 21
FACU species:	55	x 4 = 220
UPL species:	10	x 5 = 50
Column Totals:	72 (A)	291 (B)

Prevalence Index = B/A = 4.04

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W62B

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 - 12	10YR 4/2	100	-	-	-	-	clay	granular
12 - 18	10YR 4/2	99	10YR 5/6	>1	C	M	clay	granular, redox is faint

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: Redox is faint, minimal and too deep in the column. Does not meet hydric criteria. Soil is densely compacted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: ____ No X Depth (inches): ____

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W63A
Investigator(s): Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D	Easting: 369414	Northing: 4143759	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wet meadow area that is grazed by livestock. Photos of site: 1358 - soil, 1359 - east, 1360 - west, 1361 - north.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	45	Y	FACW
2. Carex praegracilis	35	Y	FACW
3. Symphyotrichum ascendens	10	N	FAC
4.			
5.			
6.			
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	80	x 2 = 160
FAC species:	10	x 3 = 30
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	90 (A)	190 (B)

Prevalence Index = B/A = 2.11

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W63A

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 - 1	-	-	-	-	-	-	organics	fibrous root zone
1 - 5	10YR 4/2	93	10YR 5/6	2	C	M	clay	granular, 5% white calcium nodules
5 - 18	10YR 3/1	85	10YR 4/6	10	C	M	clay	granular, 5% white calcium nodules

[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 C)**
- ____ 1 cm Muck (A9) **(LRR D)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR C)**
- ____ 2 cm Muck (A10) **(LRR B)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: Densely compacted. Redox is fine.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) **(Nonriverine)**
- ____ Sediment Deposits (B2) **(Nonriverine)**
- ____ Drift Deposits (B3) **(Nonriverine)**
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) **(Riverine)**
- ____ Sediment Deposits (B2) **(Riverine)**
- ____ Drift Deposits (B3) **(Riverine)**
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W63B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): valley floor meadow	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D Easting: 369423	Northing: 4143759	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Meadow area that is grazed. Photos of site: 1362 - west, 1363 - south, 1364 - soil.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Thinopyrum intermedium	60	Y	UPL
2. Poa pratensis	15	N	FAC
3. Bromus inermis	10	N	FACU
4. Medicago sativa	5	N	UPL
5.			
6.			
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:		x 2 = 0
FAC species:	15	x 3 = 45
FACU species:	10	x 4 = 40
UPL species:	65	x 5 = 325
Column Totals:	90 (A)	410 (B)

Prevalence Index = B/A = 4.56

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W63B

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 - 13	10YR 5/2	100	-	-	-	-	clay	granular
13 - 18	10YR 4/2	95	10YR 5/6	>1	C	M	clay	granular, 5% white calcium nodules

[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 C)**
- ____ 1 cm Muck (A9) **(LRR D)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR C)**
- ____ 2 cm Muck (A10) **(LRR B)**
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes:** **No: X**

Remarks: No redox in the top 13 inches of the soil column. Redox is too deep and minimal to qualify for hydric conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) **(Riverine)**
- ____ Sediment Deposits (B2) **(Riverine)**
- ____ Drift Deposits (B3) **(Riverine)**
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No _X_ Depth (inches): ____

Water Table Present? Yes: ____ No _X_ Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W64A
Investigator(s): Jeff Bolce, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): meadow	Local relief (concave, convex, none): none	Slope (%): >1
Subregion (LRR): D	Easting: 369311	Northing: 4143861	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (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: Wet meadow area adjacent to alfalfa field. Photos of site: 1365 - soil, 1366 - north, 1367 - west.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Juncus arcticus	50	Y	FACW
2. Poa pratensis	25	Y	FAC
3. Iris missouriensis	10	N	FACW
4. Symphyotrichum ascendens	10	N	FAC
5. Carex praegracilis	5	N	FACW
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
	Total Cover: 0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust_____

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 Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species:		x 1= 0
FACW species:	65	x 2 = 130
FAC species:	35	x 3 = 105
FACU species:		x 4 = 0
UPL species:		x 5 = 0
Column Totals:	100 (A)	235 (B)

Prevalence Index = B/A = 2.35

Hydrophytic Vegetation Indicators:

X Dominance Test >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Wetland plant community.

SOILS

Sampling Point: W64A

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	-	-	-	-	-	-	organics	fibrous root zone
3 - 18	10YR 4/1	87	10YR 5/6	10	C	M	clay	blocky, 3% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

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

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Moist, not saturated. It is assumed that early season water levels are sufficient to support wetland conditions.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Alton Coal Tract	City/County: Alton / Kane	Sampling Date: June 7, 2012
Applicant/Owner: U.S. Bureau of Land Management	State: Utah	Sampling Point: W64B
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington	Section, Township, Range: 12, 39S, 6W	
Landform (hillslope, terrace, etc.): agriculture field	Local relief (concave, convex, none): none	Slope (%): 1
Subregion (LRR): D	Easting: 369312	Northing: 4143873	Datum: NAD83
Soil Map Unit Name: No soil survey is available	NWI classification: Not Available	

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 disturbed? (If needed, explain any answers in Remarks.)

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

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

Remarks: Agriculture field of alfalfa. Photos of site: 1368 - soil, 1369 - south, 1370 - east.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot Size:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot Size:_____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Herb Stratum (Plot Size: 6' x 6')			
1. Medicago sativa	90	Y	UPL
2. Phleum pratense	5	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size:_____)			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust_____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species:		x 1=	0
FACW species:		x 2 =	0
FAC species:		x 3 =	0
FACU species:	5	x 4 =	20
UPL species:	90	x 5 =	450
Column Totals:	95 (A)		470 (B)

Prevalence Index = B/A = 4.95

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes: No: X

Remarks: Upland plant community.

SOILS

Sampling Point: W64B

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 - 7	10YR 4/2	100	-	-	-	-	clay loam	granular
7 - 18	10YR 4/1	93	10YR 4/6	5	C	M	clay	granular, 2% white calcium nodules

[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 C**)
- ____ 1 cm Muck (A9) (**LRR D**)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (**LRR C**)
- ____ 2 cm Muck (A10) (**LRR B**)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ 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 Soil Present? **Yes: X** **No:**

Remarks: -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1) (**Nonriverine**)
- ____ Sediment Deposits (B2) (**Nonriverine**)
- ____ Drift Deposits (B3) (**Nonriverine**)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (**Riverine**)
- ____ Sediment Deposits (B2) (**Riverine**)
- ____ Drift Deposits (B3) (**Riverine**)
- ____ Drainage patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes: ____ No X Depth (inches): ____

Water Table Present? Yes: ____ No X Depth (inches): ____

Saturation Present? (incl. capillary fringe) Yes: No X Depth (inches):

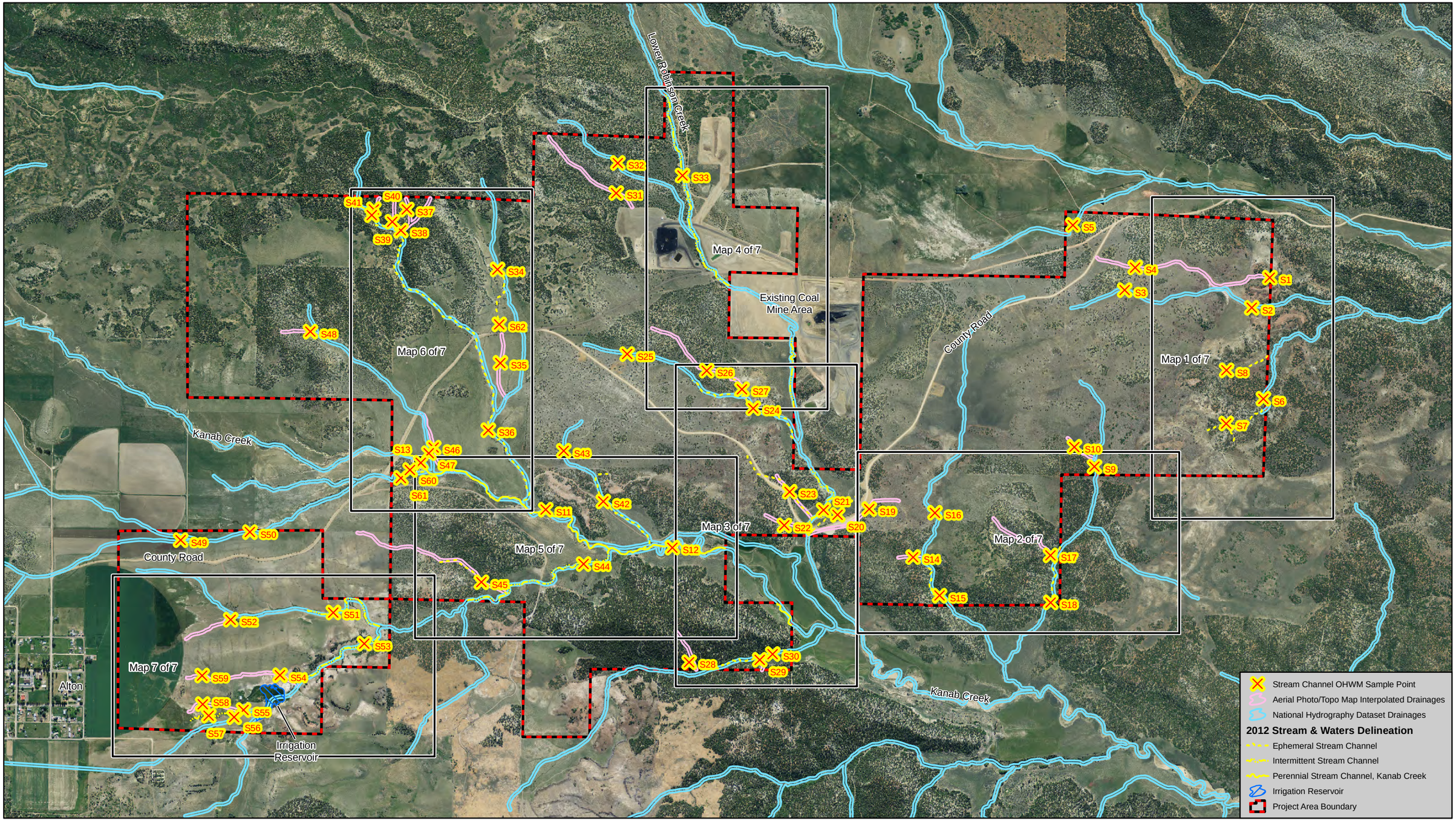
Wetland Hydrology Present? **Yes:** **No: X**

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dry and friable.

APPENDIX C

Stream Channel Delineation Maps



Appendix C. Stream Channel Delineation Index Map.

Basemap true color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Map Date: July 3, 2012
Image Date: June 22, 2011

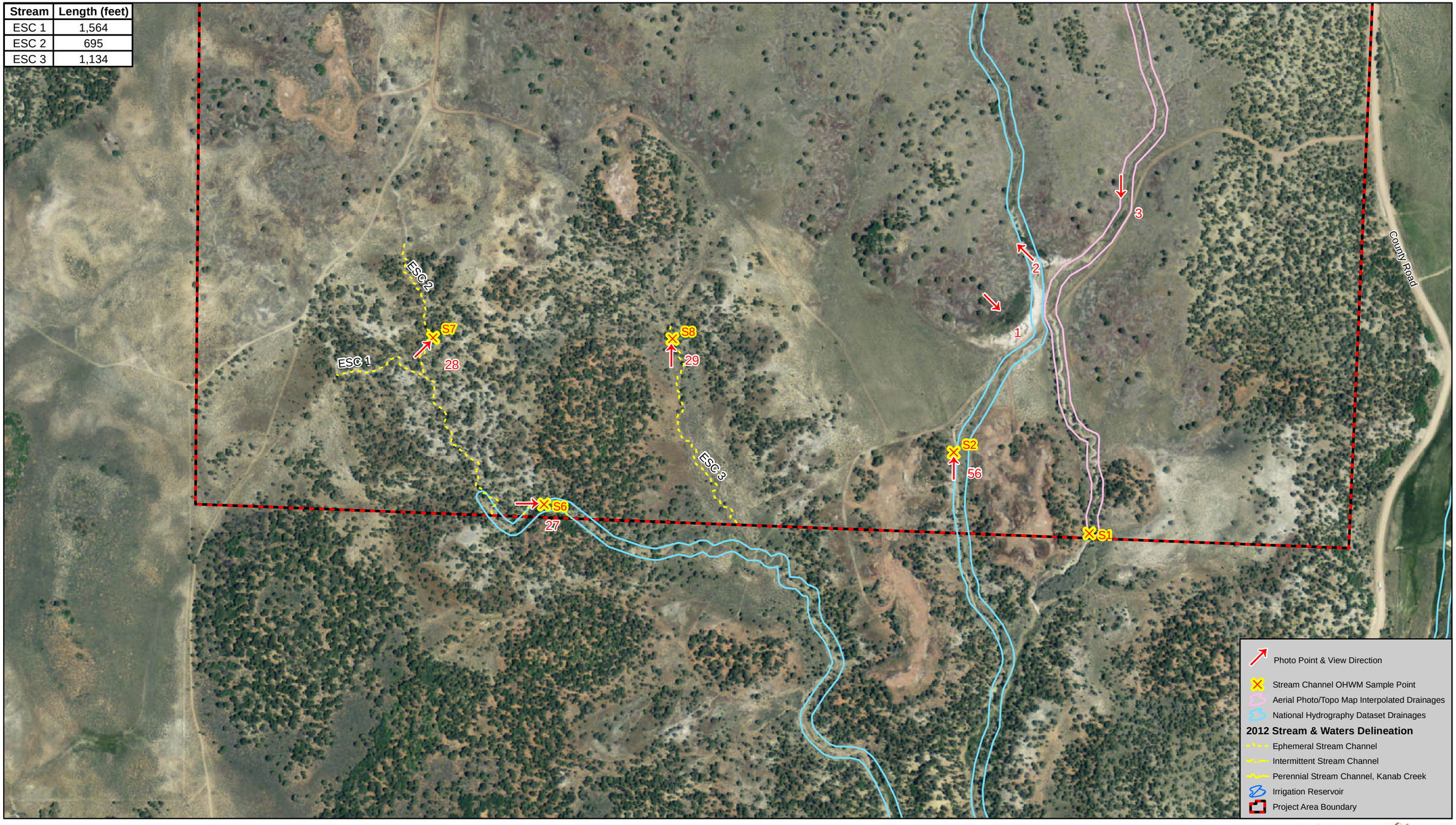
N

1 inch = 1,800 feet

0 1,000 2,000 4,000 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Stream	Length (feet)
ESC 1	1,564
ESC 2	695
ESC 3	1,134



Appendix C. Stream Channel Delineation, Map 1 of 7.

Basemap true color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

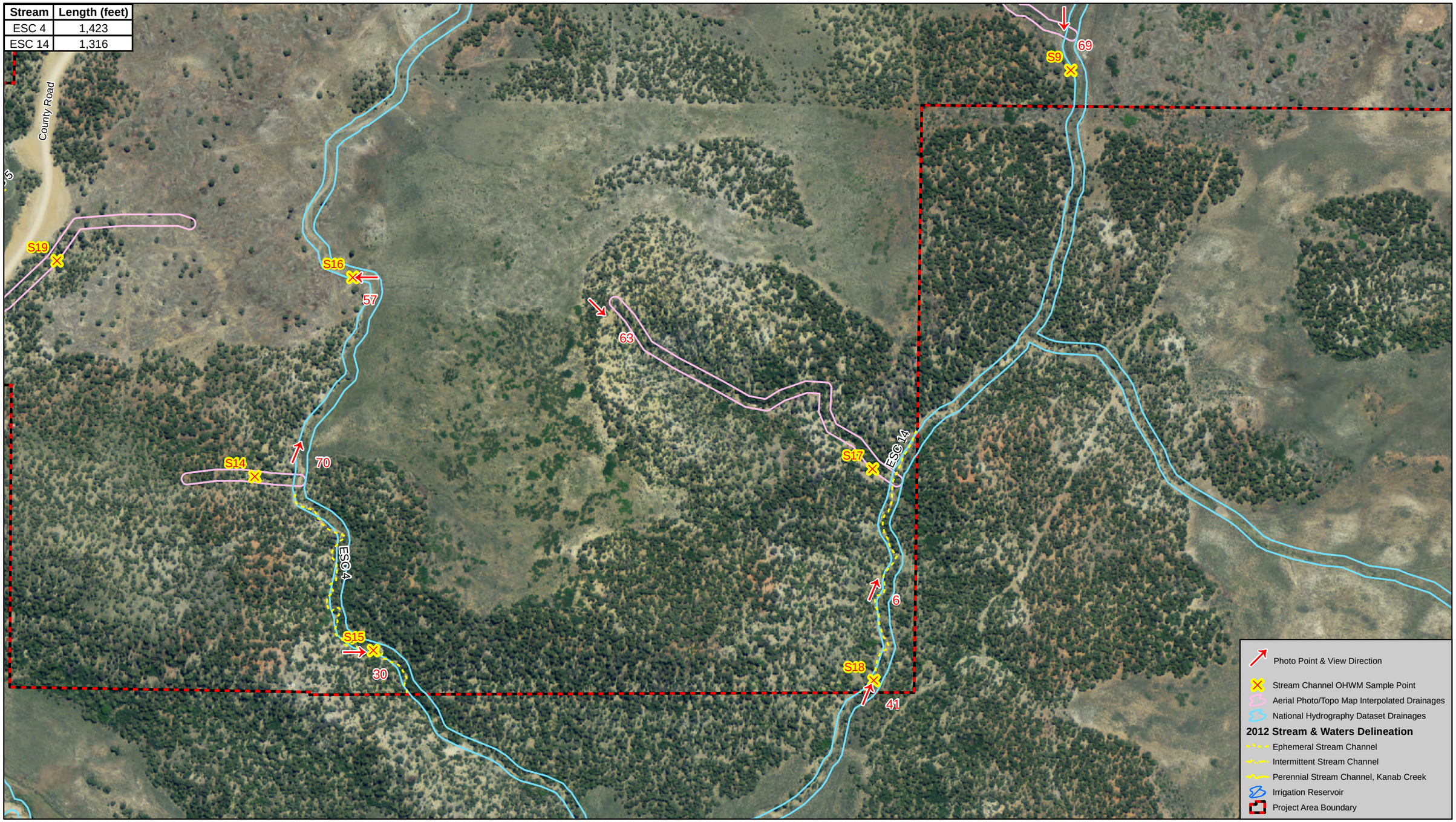
Map Date: July 3, 2012
Image Date: June 22, 2011

N

1 inch = 400 feet

0 200 400 800 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502



Appendix C. Stream Channel Delineation, Map 2 of 7.

Basemap true color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

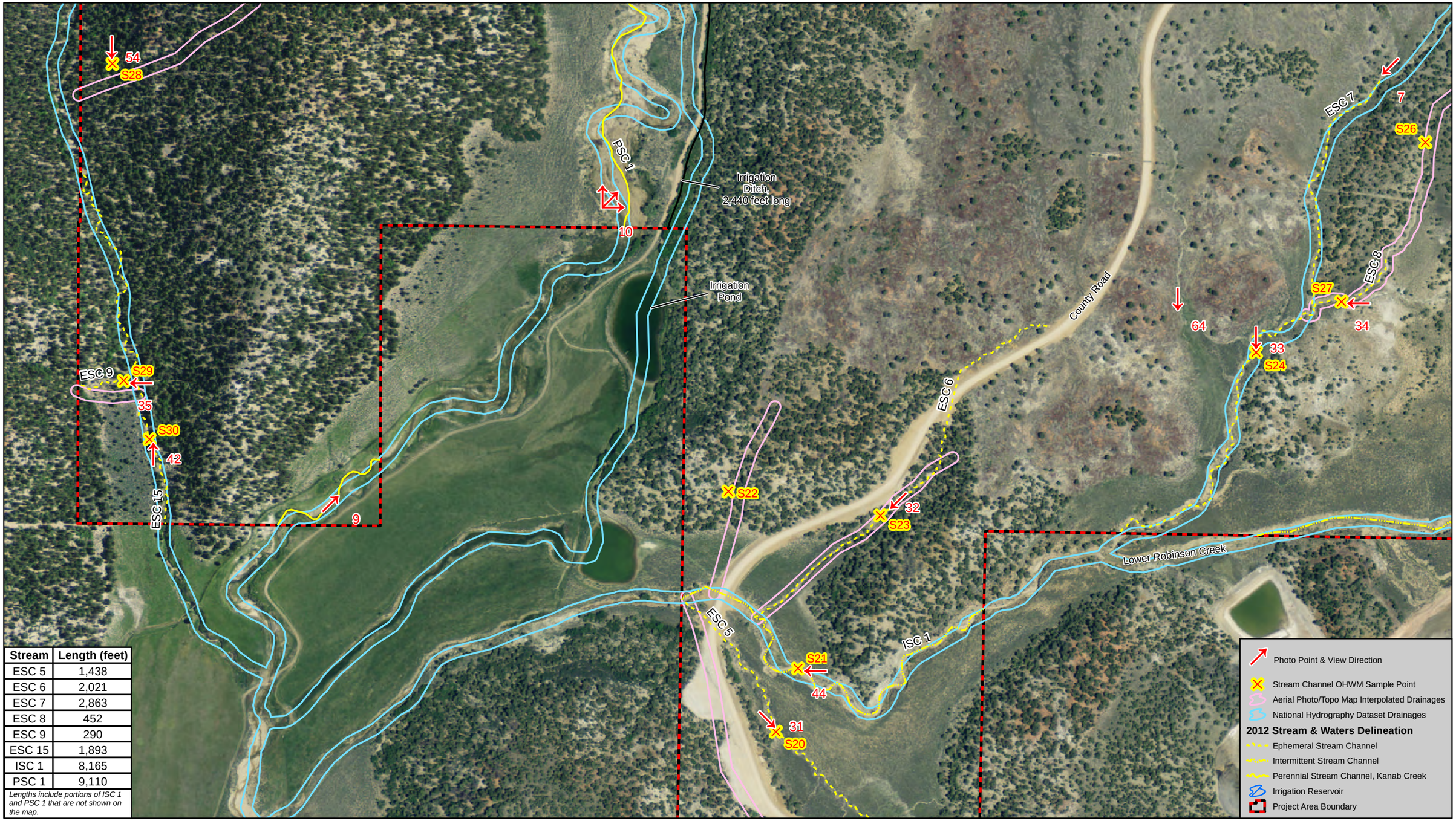
Map Date: July 3, 2012
Image Date: June 22, 2011

N

1 inch = 400 feet

0 200 400 800 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502



Stream	Length (feet)
ESC 5	1,438
ESC 6	2,021
ESC 7	2,863
ESC 8	452
ESC 9	290
ESC 15	1,893
ISC 1	8,165
PSC 1	9,110

Lengths include portions of ISC 1 and PSC 1 that are not shown on the map.

Appendix C. Stream Channel Delineation, Map 3 of 7.

Basemap true color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Map Date: July 3, 2012
Image Date: June 22, 2011

N

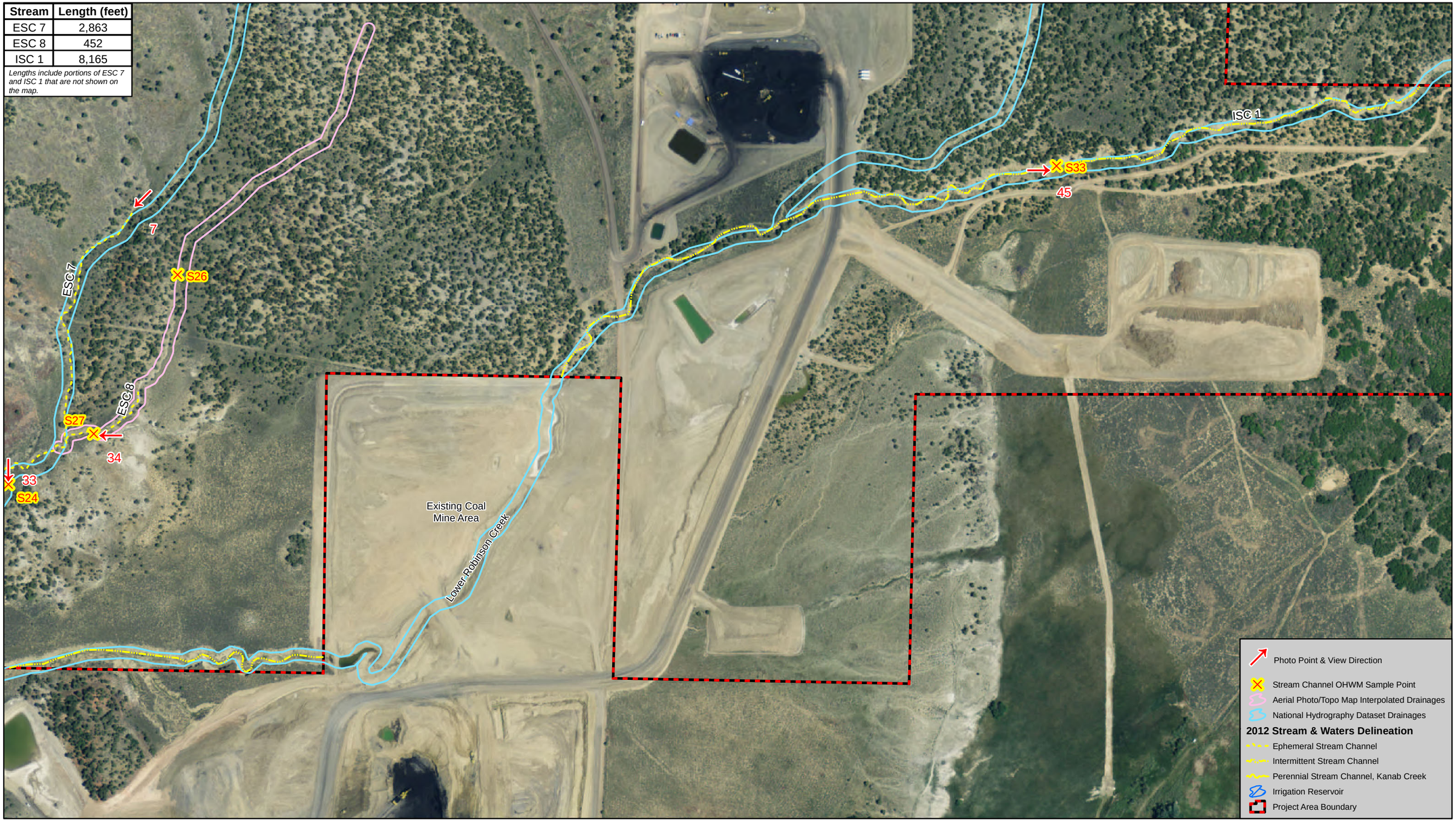
1 inch = 400 feet

0 200 400 800 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Stream	Length (feet)
ESC 7	2,863
ESC 8	452
ISC 1	8,165

Lengths include portions of ESC 7 and ISC 1 that are not shown on the map.



Appendix C. Stream Channel Delineation, Map 4 of 7.

Basemap true color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

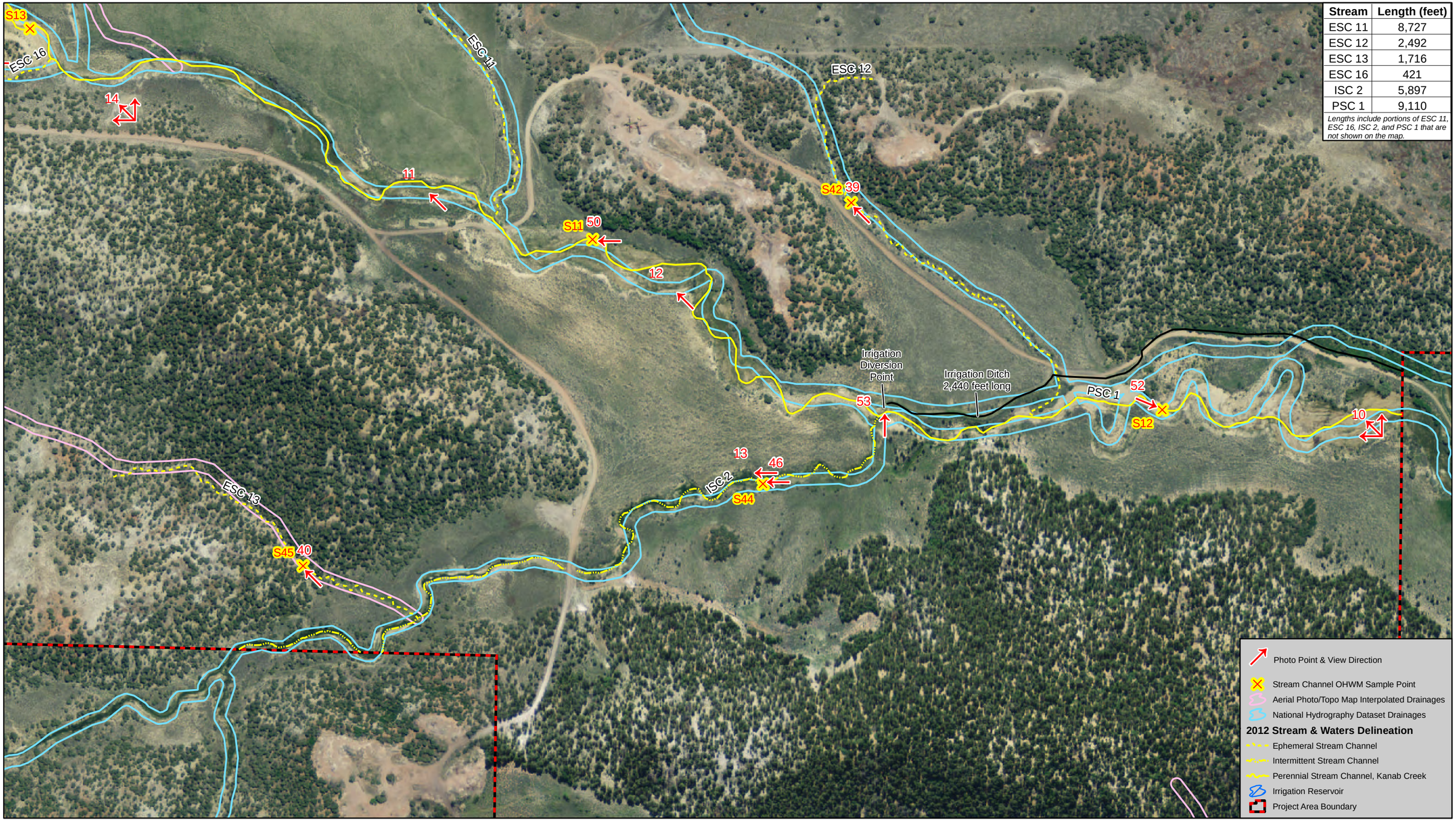
Map Date: July 3, 2012
Image Date: June 22, 2011

N

1 inch = 400 feet

0 200 400 800 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502



Stream	Length (feet)
ESC 11	8,727
ESC 12	2,492
ESC 13	1,716
ESC 16	421
ISC 2	5,897
PSC 1	9,110

Lengths include portions of ESC 11, ESC 16, ISC 2, and PSC 1 that are not shown on the map.

Appendix C. Stream Channel Delineation, Map 5 of 7.

Basemap true color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

Map Date: July 3, 2012
Image Date: June 22, 2011

N

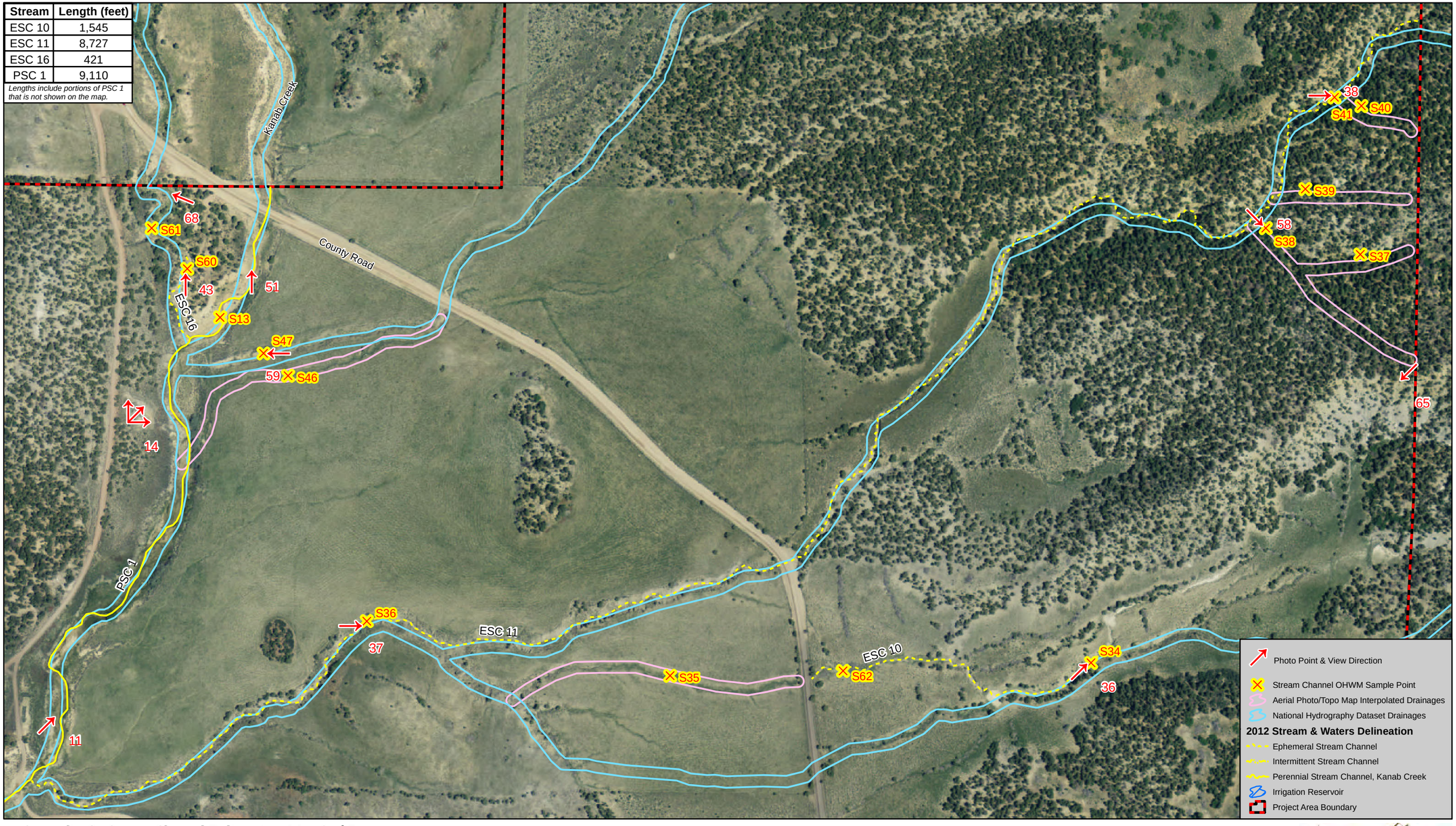
1 inch = 400 feet

0 200 400 800 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Stream	Length (feet)
ESC 10	1,545
ESC 11	8,727
ESC 16	421
PSC 1	9,110

Lengths include portions of PSC 1 that is not shown on the map.



Appendix C. Stream Channel Delineation, Map 6 of 7.

Basemap true color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

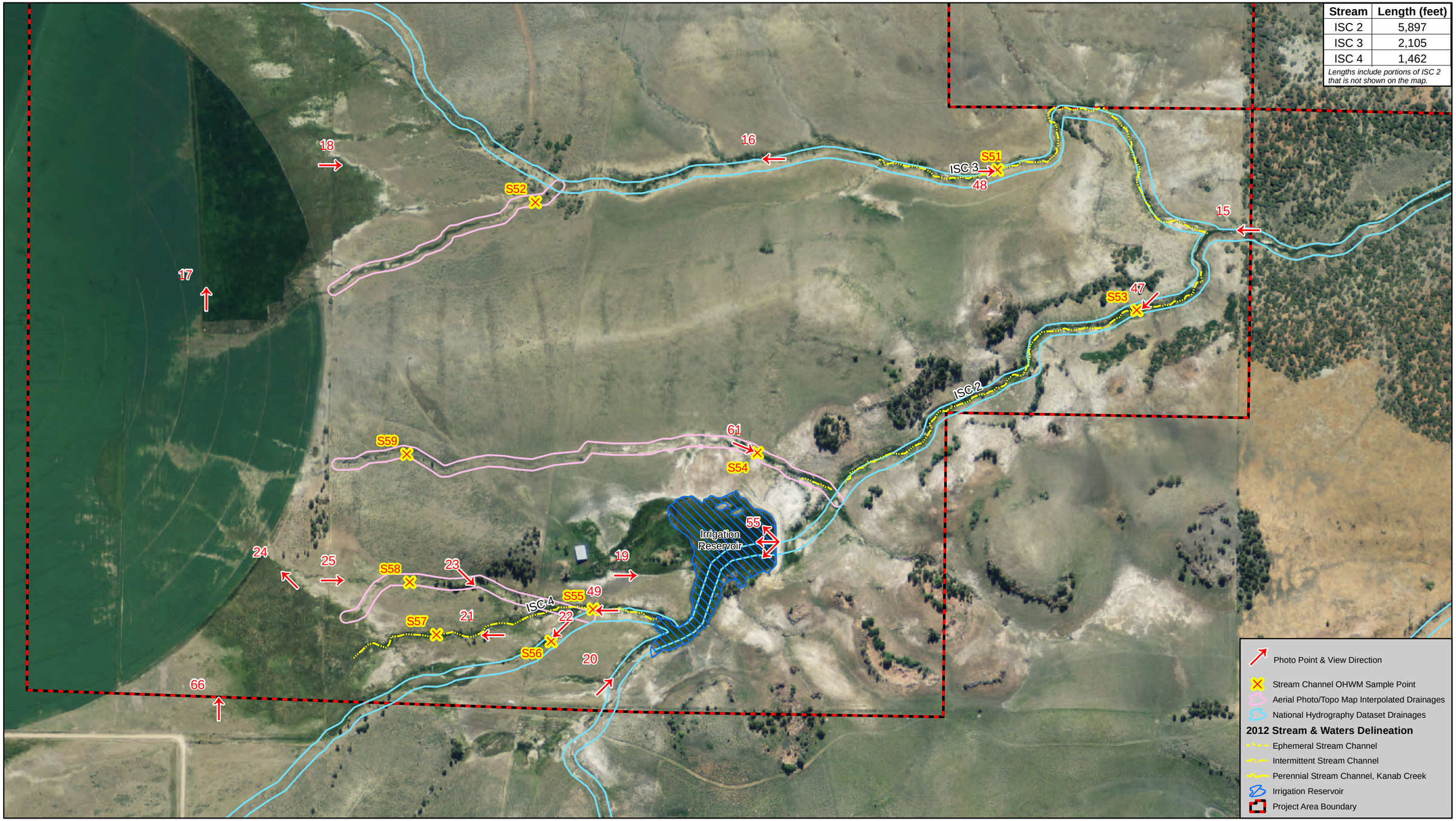
Map Date: July 3, 2012
Image Date: June 22, 2011

N

1 inch = 400 feet

0 200 400 800 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502



Stream	Length (feet)
ISC 2	5,897
ISC 3	2,105
ISC 4	1,462

Lengths include portions of ISC 2 that is not shown on the map.

Appendix C. Stream Channel Delineation, Map 7 of 7.

Map Date: July 3, 2012
Image Date: June 22, 2011

N

1 inch = 400 feet

0 200 400 800 Feet

FRONTIER CORPORATION USA
Environmental Consultants
221 N. GATEWAY DRIVE, SUITE B
PROVIDENCE, UT 84332
PHONE (435)-753-9502

Basemap true color imagery from 2011 National Agricultural Imagery Program, 1-meter resolution.

APPENDIX D

Arid West Ordinary High Water Mark Data Sheets

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S1
Investigator(s): Jeff Boice, Collin Covington, Dennis Wenger
Date: May 3, 2012 **Time:** 3:15 pm
Town: Alton **State:** Utah
Photo begin file#: 012 **Photo end file#:** 014

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: South portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 371194 mE 4137186 mN

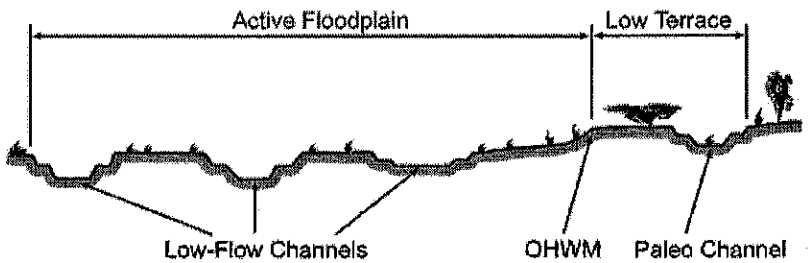
Potential anthropogenic influences on the channel system:
None

Brief site description:
Incised drainage, ~10' of vertical entrenchment, Pinyon-Juniper forested landscape with a sagebrush understory

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

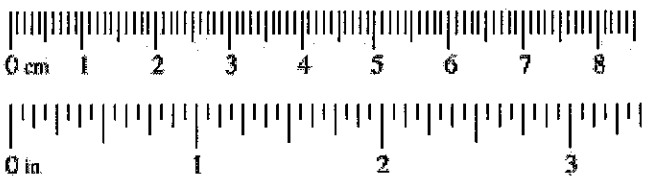


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

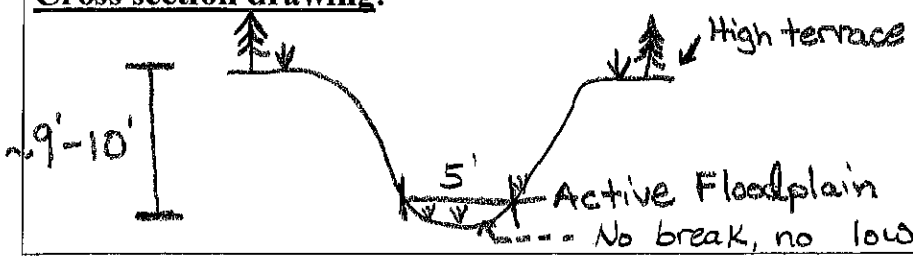
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S1 **Date:** 5/3/12 **Time:** 3:15 pm

Cross section drawing:



U-shaped bottom with a ravelling bank.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.
U-shaped drainage bottom with western wheatgrass on bottom & on sideslopes.

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: course angular, gravel / pebble
Total veg cover: 2 % Tree: ____ % Shrub: ____ % Herb: 2 %
Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Western wheatgrass is the vegetation in the drainage. Drainage has evidence of ephemeral flow, but no OHWM or defined stream channel.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S2
Investigator(s): Jeff Boice, Collin Covington, Dennis Wenger

Date: May 3, 2012 **Time:** 4:17 pm
Town: Alton **State:** Utah
Photo begin file#: 019 **Photo end file#:** 022

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: South portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 371013 mE 4137293 mN

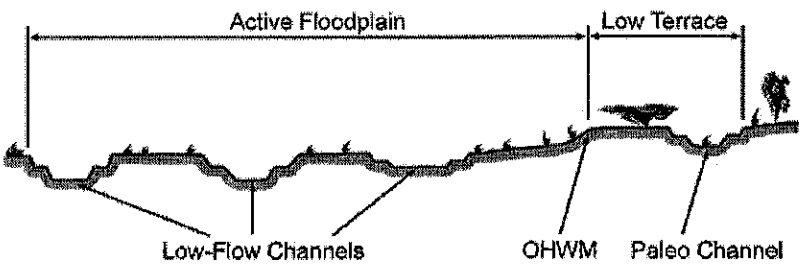
Potential anthropogenic influences on the channel system:
None

Brief site description:
Drainage bordered by a low-sagebrush terrace, east-side ~3' & west-side is sloped.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

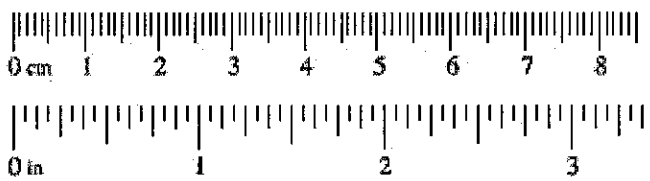


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

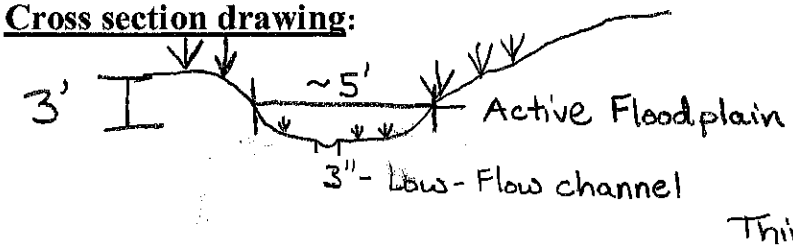
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S2 **Date:** May 3, 2012 **Time:** 4:17 pm

Cross section drawing:



U-shaped bottom of drainage w/ small Low-Flow channel
Vegetation on drainage bottom.
Thin layer of salt effervescence.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Grass on bottom of drainage.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: 0 % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Channel is ~ 3" wide by 1/2" deep.

Project ID: 421 **Cross section ID:** S2 **Date:** May 3, 2012 **Time:** 4:17 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Course, angular pebble, embedded in high amounts of silt

Total veg cover: ≥ 1 % Tree: ____% Shrub: ____% Herb: ≥ 1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Drainage has evidence of ephemeral flow, but no OHWM indicators or defined stream channel.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____% Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S3
Date: May 3, 2012 **Time:** 5:33 pm
Town: Alton **State:** Utah
Photo begin file#: 033 **Photo end file#:** 035
Investigator(s): Dennis Wenger, Jeff Boice, Collin Covington

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: South portion of project area

Projection: UTM **Datum:** NAD 83
Coordinates: 371119 mE 4138054 mN

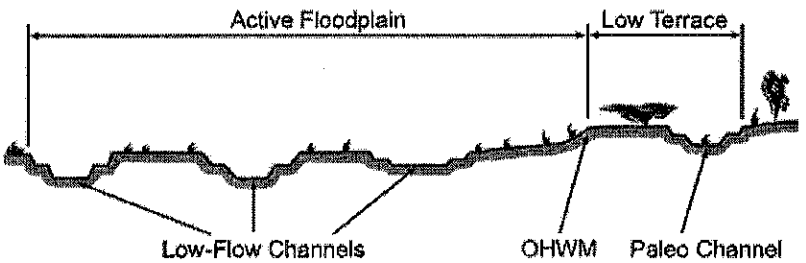
Potential anthropogenic influences on the channel system:
Placement of cleared Juniper in drainage could have a damming effect.

Brief site description:
Sagebrush terrace.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

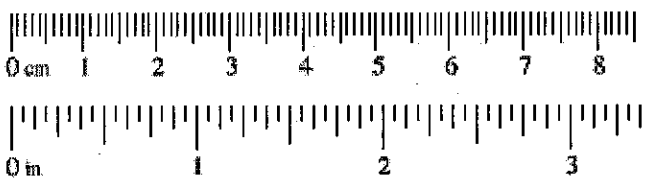


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

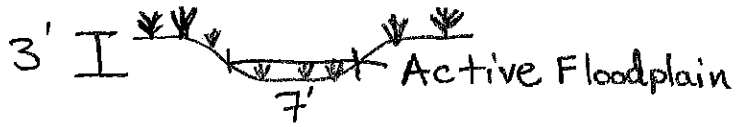
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	Sand
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	Silt
1/32 0.00061	0.0156	Medium silt	
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



Project ID: 421 **Cross section ID:** S3 **Date:** May 3, 2012 **Time:** 5:33 pm

Cross section drawing:



U-shaped drainage bottom. Drainage is vegetated.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: 0 % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No channel indicators.

Project ID: 421 **Cross section ID:** S3 **Date:** May 3, 2012 **Time:** 5:33 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:
Average sediment texture: Silt
Total veg cover: 6 % Tree: ____ % Shrub: >1 % Herb: ≥5 %
Community successional stage:
- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:
- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments: (more in bottom comments)
No indicators present. Vegetation is thicker near the damming effect of the juniper in the drainage.
Vegetation in drainage includes: Achillea millefolium, Crested Wheatgrass, Astragalus sp., Clover sp.

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:
Average sediment texture: _____
Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %
Community successional stage:
- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:
- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:
Drainage has evidence of ephemeral flow, but no OHWM of defined stream channel.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S4
Investigator(s): Jeff Boice, Collin Covington, Dennis Wenger

Date: May 3, 2012 **Time:** 5:52 pm
Town: Alton **State:** Utah
Photo begin file#: 036 **Photo end file#:** 038

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: South portion of project area

Projection: UTM **Datum:** NAD 83
Coordinates: 371255 mE 4137991 mN

Potential anthropogenic influences on the channel system:

Some juniper trees placed in drainage off of nearby upland, high terrace.

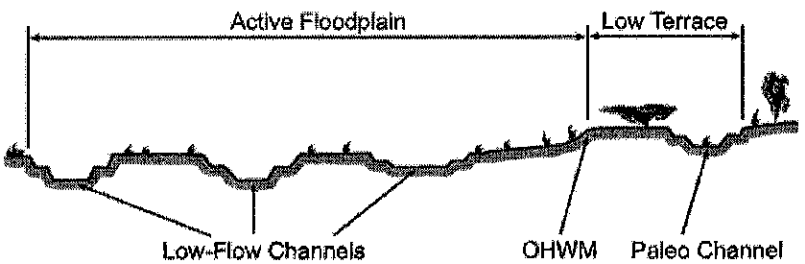
Brief site description:

Sagebrush understory with a juniper tree stratum.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

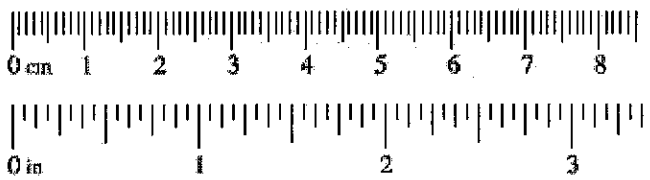


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

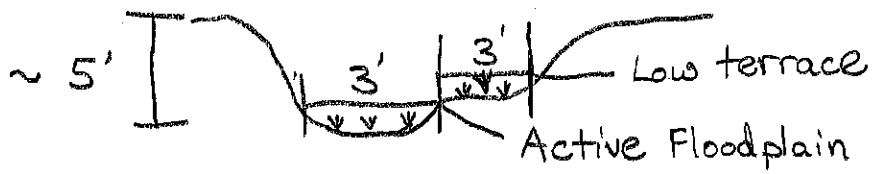
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S4 **Date:** May 3, 2012 **Time:** 5:52 pm

Cross section drawing:



U-shaped drainage.
Drainage is vegetated.
Low terrace present

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No evidence of a Low-Flow Channel.

Project ID: 421 **Cross section ID:** S4 **Date:** May 3, 2012 **Time:** 5:52 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Fine silt

Total veg cover: ≥ 5 % Tree: ____ % Shrub: ____ % Herb: ≥ 5 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No indicators present. Vegetation in drainage includes: Cirsium sp., Western wheatgrass (found on high terrace) Drainage has evidence of ephemeral flow, but no OHWM indicators or defined stream channel.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Fine silt

Total veg cover: ~15 % Tree: ____ % Shrub: ≥10 % Herb: ≥ 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No indicators present. Vegetation includes Sagebrush, Western wheatgrass, & Cirsium sp.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S5
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 4, 2012 **Time:** 9:07 am
Town: Alton **State:** Utah
Photo begin file#: 044 **Photo end file#:** 046

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: South portion of project area

Projection: UTM **Datum:** NAD 83
Coordinates: 371510 mE 4138364 m N

Potential anthropogenic influences on the channel system:

None

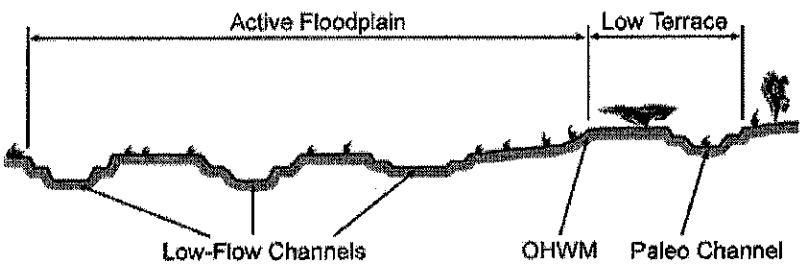
Brief site description:

Broad, u-shaped drainage with meadow on left-side and Pinyon Juniper/ Sagebrush vegetation on the right-side.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

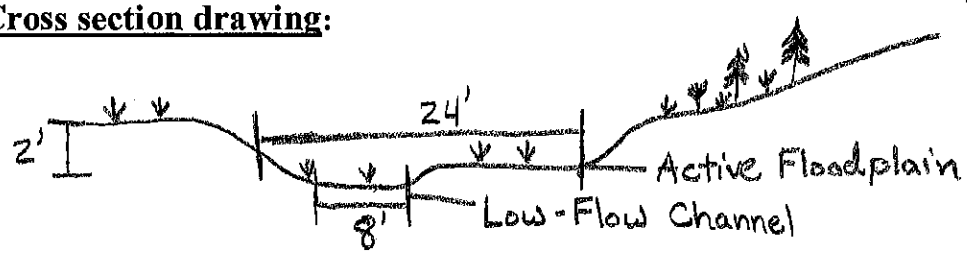
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S5 **Date:** May 4, 2012 **Time:** 9:07 am

Cross section drawing:



Heavily vegetated, U-shaped drainage.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators present.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: 85 % Tree: ____ % Shrub: ____ % Herb: 85 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

~ 8' wide drainage that is dominated by wetland indicator species of Carex sp. & Juncus sp. No indicators present

Project ID: 421 **Cross section ID:** S5 **Date:** May 4, 2012 **Time:** 9:07 am

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: 75 % Tree: ____ % Shrub: ____ % Herb: 75 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

~ 24' wide, wetland drainage swale that has no OHWM or stream channel.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S6
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 4, 2012 **Time:** 10:10 am
Town: Alton **State:** Utah
Photo begin file#: 052 **Photo end file#:** 054

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: South side of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370469 m E 4137223 m N

Potential anthropogenic influences on the channel system:

None

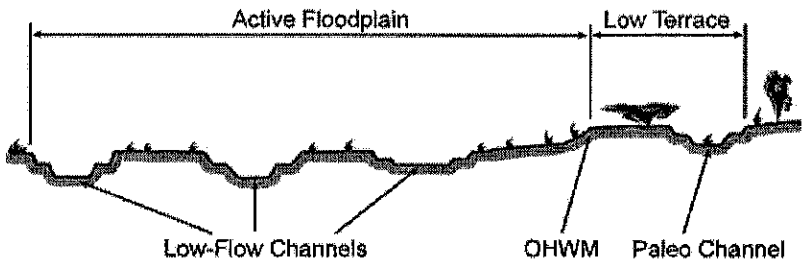
Brief site description:

Pinyon Juniper landscape with sparse understory. Channel is controlled by bedrock.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



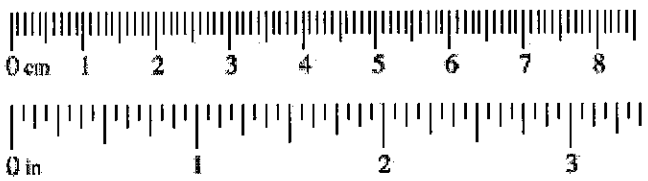
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Ephemeral stream channel 1

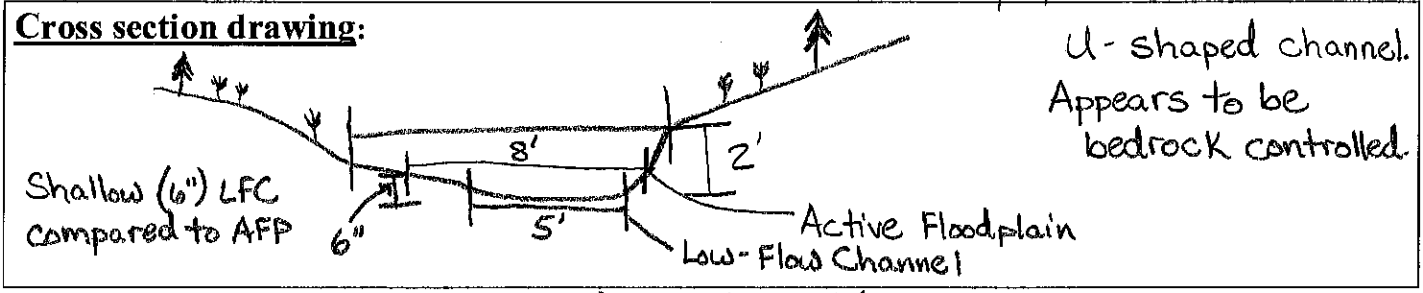
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S6 **Date:** May 4, 2012 **Time:** 10:10 am

Cross section drawing:



OHWM = Active floodplain = 8' WIDE

OHWM ESC #1

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Evidence of sediment sorting, smoothing of particles.
This sorting is indicative of more regular flow events.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Cobble, rounding
Total veg cover: TR % Tree: ____% Shrub: ____% Herb: TR %
Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [x] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

~5' wide by 6" deep.

Project ID: 421 **Cross section ID:** S 6 **Date:** May 4, 2012 **Time:** 10:10 am

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble

Total veg cover: TR % Tree: ____ % Shrub: ____ % Herb: TR %

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Upland vegetation across site. Evidence of particle sorting and rounding.

Ephemeral Stream Channel 1

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S7
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 4, 2012 **Time:** 11:26 am
Town: Alton **State:** Utah
Photo begin file#: 064 **Photo end file#:** 068

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: South portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370321 mE 4137446 mN

Potential anthropogenic influences on the channel system:

None

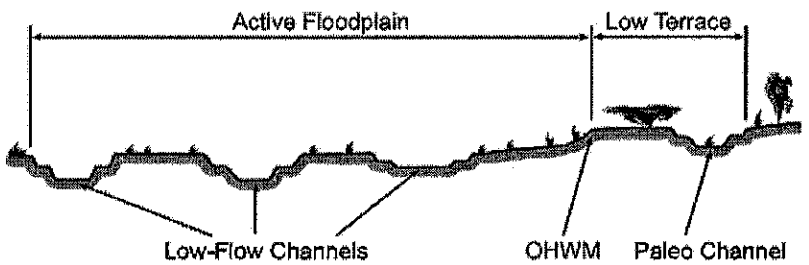
Brief site description:

Slightly incised drainage in a Pinyon-Juniper / Sagebrush / upland herbacious vegetation, (wheatgrass, cheatgrass, Ranunculus testiculatus).

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

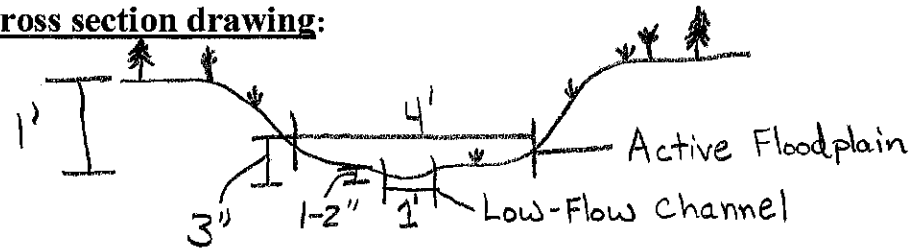
Ephemeral Stream Channel 2

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
			Very fine sand	
1/8	0.0025	0.0625		
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
			Very fine silt	
1/128	0.00015	0.0039		
			Clay	Mud

Project ID: 421 **Cross section ID:** S7 **Date:** May 4, 2012 **Time:** 11:26 am

Cross section drawing:



U-shaped drainage

OHWM = Active floodplain = 4' WIDE

OHWM ESC #2

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [ ] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

OHWM indicators are very minor.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular

Total veg cover: ≥1 % Tree: ____% Shrub: ____% Herb: ≥1 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [ ] Presence of bed and bank
- [x] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

A bed is present but no bank. Ranunculus testiculatus present in LFC.

Project ID: 421 **Cross section ID:** S7 **Date:** May 4, 2012 **Time:** 11:26 am

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular

Total veg cover: ≥ 1 % Tree: ____ % Shrub: ____ % Herb: ≥ 1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Bank has a more distinct break. There is mudcracks above the AFP.

Ephemeral Stream Channel 2

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S 8
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 4, 2012 **Time:** 12:51 pm
Town: Alton **State:** Utah
Photo begin file#: 076 **Photo end file#:** 078

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: South portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370639 mE 4137444 mN

Potential anthropogenic influences on the channel system:
None

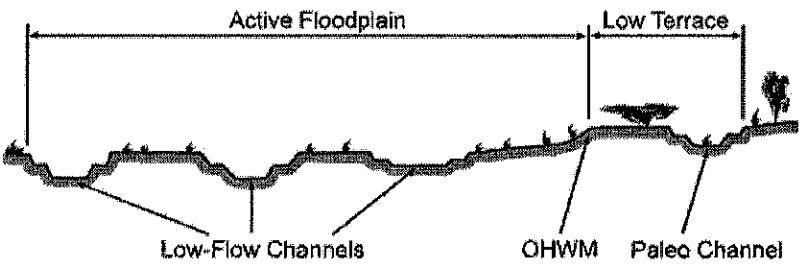
Brief site description:
Pinyon-Juniper, sagebrush, & upland herbacious vegetation on high terrace. Incised into landscape. Multiple drainages.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

Ephemeral stream channel 3

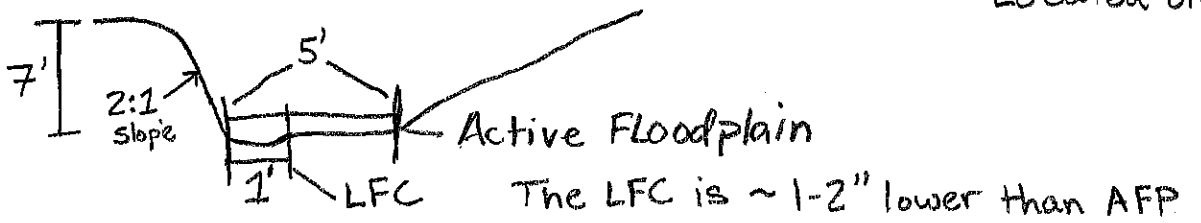
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S8 **Date:** May 4, 2012 **Time:** 12:51 pm

Cross section drawing:

Located on a bend.



OHWM = ACTIVE Floodplain = 5' wide

OHWM ESC #3

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Trace vegetation in channel.

Minimal OHWM presence.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular

Total veg cover: ≥ 1 % Tree: ____% Shrub: ____% Herb: ≥1 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [x] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

~ 1' wide by 1-2" deep

Project ID: 421 **Cross section ID:** S8 **Date:** May 4, 2012 **Time:** 12:51 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular

Total veg cover: ≥ 1 % Tree: ____ % Shrub: ____ % Herb: ≥ 1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

~5' wide with patches of silt deposition & upland plant species.

Ephemeral Stream Channel 3

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S9
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 4, 2012 **Time:** 2:19 pm
Town: Alton **State:** Utah
Photo begiu file#: 090 **Photo end file#:** 092

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: South portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370061 mE 4138235 mN

Potential anthropogenic influences on the channel system:

None

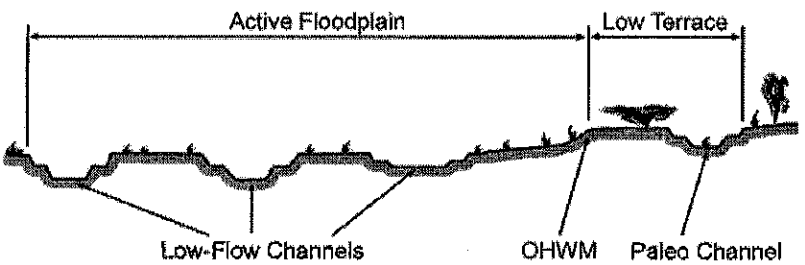
Brief site description:

Pinyon-Juniper, sagebrush, upland herbacious vegetation on the high terrace. Drainage incised ~6'.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

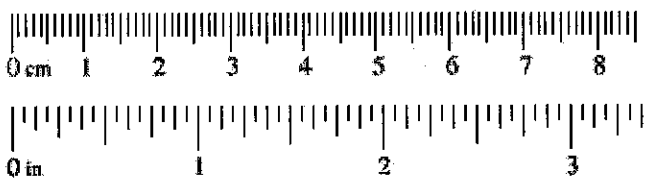


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

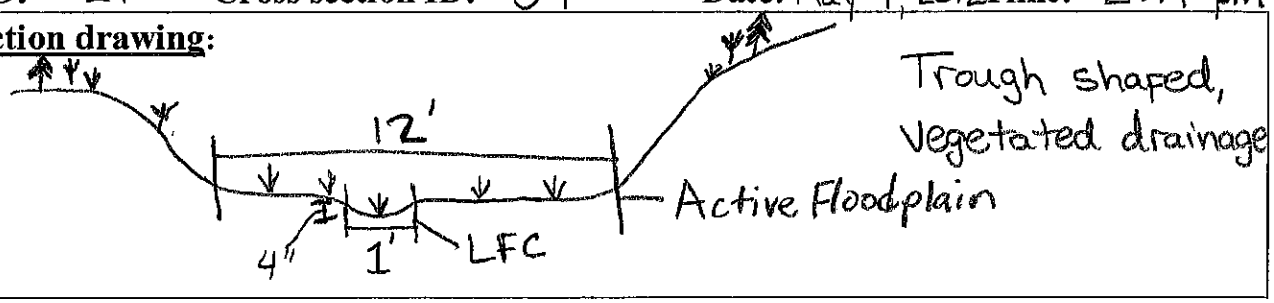
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S9 **Date:** May 4, 2012 **Time:** 2:19 pm

Cross section drawing:



OHWM

GPS point: see location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators

Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 85 % Tree: ____ % Shrub: ____ % Herb: 85 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

~ 1' wide & 4" deep

Project ID: 421 **Cross section ID:** S9 **Date:** May 4, 2012 **Time:** 2:19 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: 90 % Tree: ____ % Shrub: ____ % Herb: 90 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☒ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

~12' wide, No OHWM indicators, but there is evidence of ephemeral flow. Vegetation in drainage: Western wheatgrass 70%
Poa sp. & forbs 10%
Juncus sp. 10%
Vegetated upland drainage swale.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S10
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 4, 2012 **Time:** 2:45 pm
Town: Alton **State:** Utah
Photo begin file#: 096 **Photo end file#:** 098

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: South portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370181 mE 4138355 mN

Potential anthropogenic influences on the channel system:

None

Brief site description:

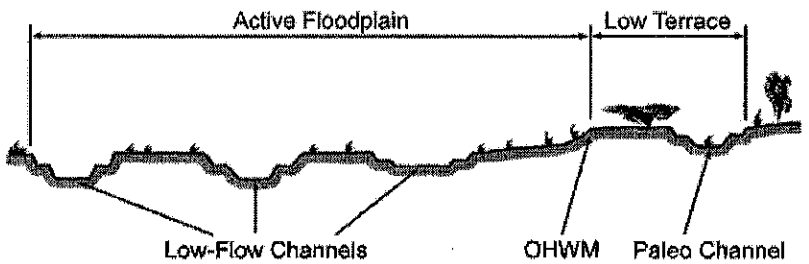
Drainage incised ~5' with a Pinyon-Juniper, Sagebrush & upland vegetation herbacious layer.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

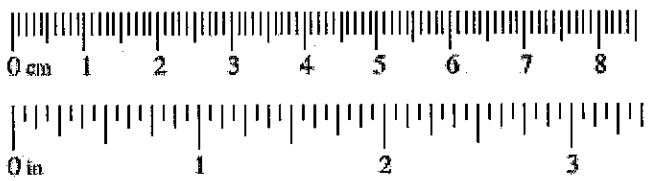


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

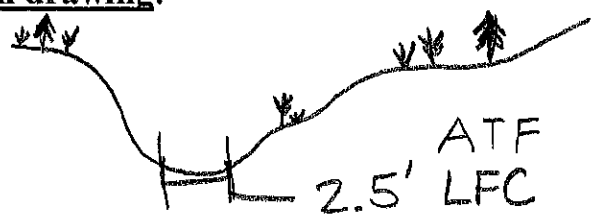
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S10 **Date:** May 4, 2012 **Time:** 2:45 pm

Cross section drawing:



The Low-Flow Channel comprises the entire drainage bottom. Active Floodplain is confined WITHIN LOW Flow channel

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular

Total veg cover: 0 % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No indicators present. Ephemeral drainage. Terrace present in mid-drainage.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S11, Kanab Creek
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 4, 2012 **Time:** 3:43 pm
Town: Alton **State:** Utah
Photo begin file#: 099 **Photo end file#:** 102

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area. Kanab Creek

Projection: UTM **Datum:** NAD83
Coordinates: 369804 mE 4141519 mN

Potential anthropogenic influences on the channel system:

None

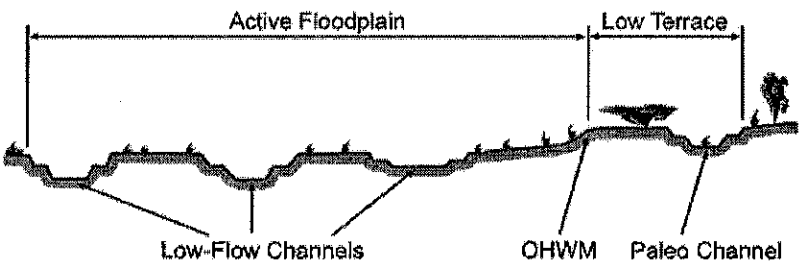
Brief site description:

Kanab Creek floodplain within upland high terraces covered with Pinyon-Juniper and Sagebrush.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

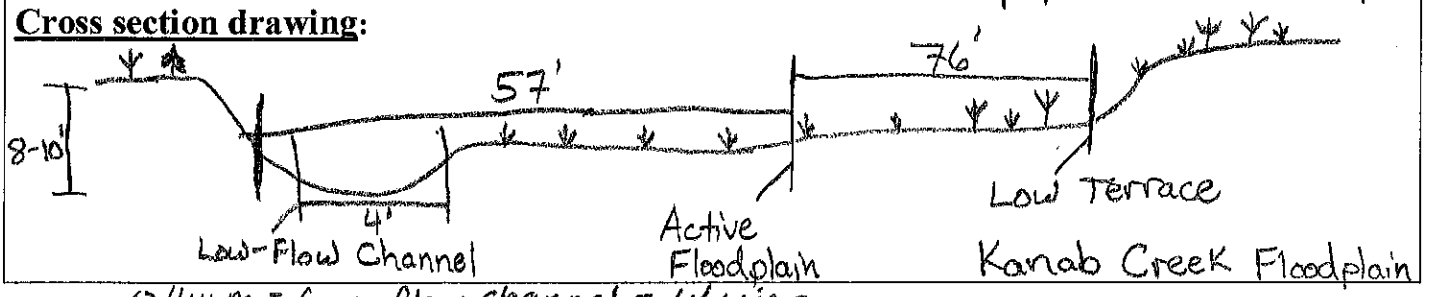
Perenial stream channel / Kanab Creek

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
			Very fine sand	
1/8	0.0025	0.0625		
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
			Very fine silt	
1/128	0.00015	0.0039		
			Clay	Mud

Project ID: 421 **Cross section ID:** S11 **Date:** May 4, 2012 **Time:** 3:43 pm

Cross section drawing:



OHWM = Low-flow channel = 4' wide

OHWM PSC #1

GPS point: See location on front

Indicators:

- ☒ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

OHWM is present. Fine material in the bed with banks densely vegetated with Juncus sp. Active flood plain is vegetated OHWM is WITHIN "LOW FLOW CHANNEL".

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, rounding

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Perennial Stream Channel of Kanab Creek

Project ID: 421 **Cross section ID:** S11 **Date:** May 4, 2012 **Time:** 3:43 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: 70 % Tree: ____ % Shrub: ____ % Herb: 70 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☒ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☒ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Evidence of recent flooding, vegetation is bent over facing downstream. Vegetation is dominated by Juncus sp.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Soil

Total veg cover: 96 % Tree: ____ % Shrub: 21 % Herb: 95 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Terrace is dominated by upland vegetation which is adjacent to Active Floodplain dominated by wetland vegetation.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S12, Kanab Creek
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 4, 2012 **Time:** 4:26 pm
Town: Alton **State:** Utah
Photo begin file#: 103 **Photo end file#:** 106

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: Central portion of Kanab Creek. project area.

Projection: UTM **Datum:** NAD83
Coordinates: 369577 mE 4140762 mN

Potential anthropogenic influences on the channel system:
Valley floodplain worked with heavy machinery upstream.

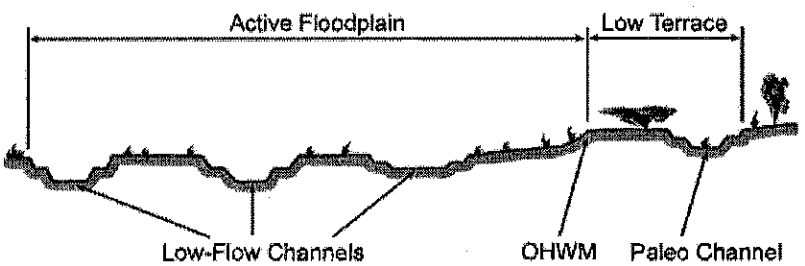
Brief site description:
Perennial stream channel of Kanab Creek with high terraces vegetated with Pinyon-Juniper, Sagebrush, & upland herb vegetation

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies

- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

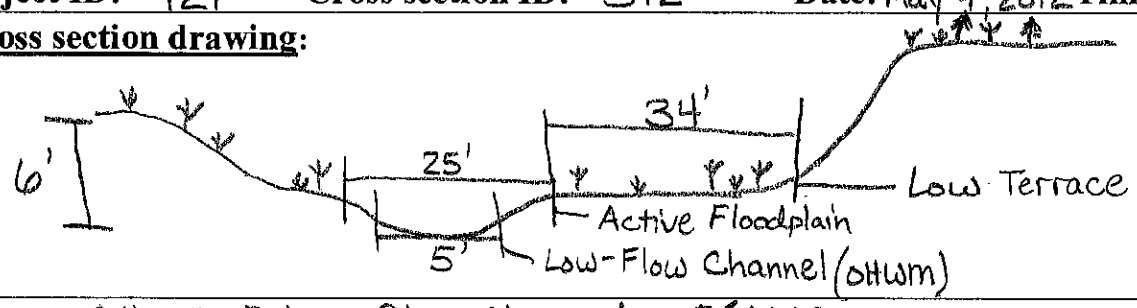
Perenial stream channel |
Kanab Creek

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S12 **Date:** May 4, 2012 **Time:** 4:26 pm

Cross section drawing:



OHWM = Low-Flow channel = 5' wide

OHWM PSC #1

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

OHWM is confined to the "Low-Flow Channel", Perennial Stream Channel. Active floodplain is vegetated.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, rounded

Total veg cover: ≥ 1 % Tree: ____% Shrub: ≥ 1 % Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Perennial Stream Channel of Kanab Creek.

Project ID: 421 **Cross section ID:** S12 **Date:** May 4, 2012 **Time:** 4:26 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, rounded

Total veg cover: 12 % Tree: ____ % Shrub: 10 % Herb: 2 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Gradual slope to high terrace, no bank present but only the bed.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 18 % Tree: ____ % Shrub: 15 % Herb: 3 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Terrace is vegetated with Salix exigua & sagebrush closer to the slope. There is a relict side channel near the slope on the right.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S13, Kanab Creek
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 4, 2012 **Time:** 5:15 pm
Town: Alton **State:** Utah
Photo begin file#: 116 **Photo end file#:** 118

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Northern portion of Kanab Creek. project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370084 mE 4142268 mN

Potential anthropogenic influences on the channel system:

None

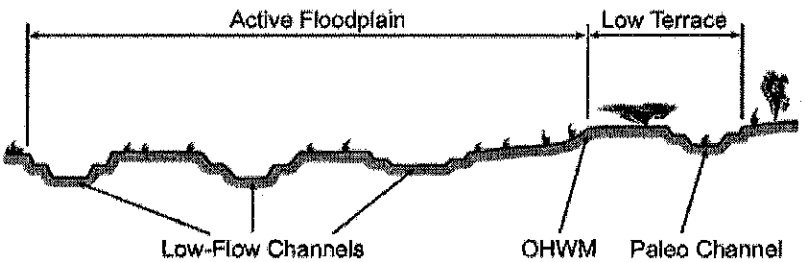
Brief site description:

Kanab Creek floodplain within upland high terraces covered with Pinyon-Juniper & Sagebrush ~ 25' above low-terrace & 29' above active floodplain

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



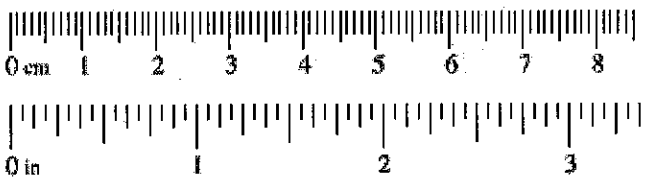
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

Perenial Stream Channel 1
Kanab Creek

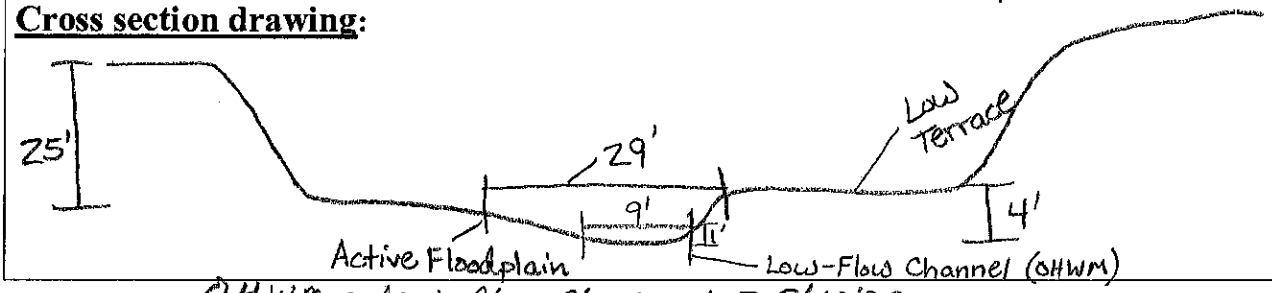
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S13 **Date:** May 5, 2012 **Time:** 5:15 pm

Cross section drawing:



OHWM = Low flow channel = 9' wide

OHWM

PSC #1

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [ ] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

No vegetation beneath the OHWM. The OHWM is restricted to the Low-Flow channel. Active floodplain is vegetated.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, rounded

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Perennial stream channel of Kanab Creek.

Project ID: 421 **Cross section ID:** S13 **Date:** May 4, 2012 **Time:** 5:15 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, smooth & rounded

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Silt deposits from recent floodplain activity. Bed is present, the bank has a gradual slope.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble

Total veg cover: 7 % Tree: ____% Shrub: 2 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No recent flooding activity.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S14
Investigator(s): Jeff Boice, Collin Covington

Date: May 5, 2012 **Time:** 10:19 am
Town: Alton **State:** Utah
Photo begin file#: 132 **Photo end file#:** 134

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 369521 mE 4139320 mN

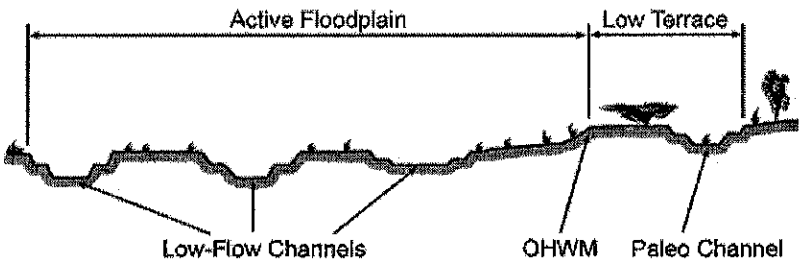
Potential anthropogenic influences on the channel system:
None

Brief site description:
Pinyon-Juniper dominated landscape with very minimal herbacious understory. There is an 8-10% drainage slope.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

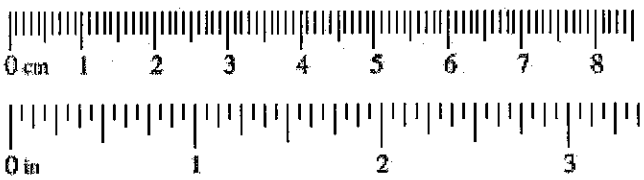


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

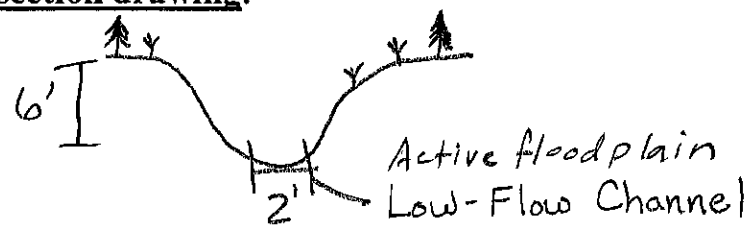
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S14 **Date:** May 5, 2012 **Time:** 10:19 am

Cross section drawing:



Low-Flow Channel Covers the entire Active Floodplain V-shaped drainage

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, platy & angular

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Ephemeral drainage swale on an erosional landscape.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S15
Investigator(s): Jeff Boice, Collin Covington

Date: May 5, 2012 **Time:** 10:47 am
Town: Alton **State:** Utah
Photo begin file#: 140 **Photo end file#:** 142

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area

Projection: UTM **Datum:** NAD83
Coordinates: 369289 m E 4139162 m N

Potential anthropogenic influences on the channel system:

None

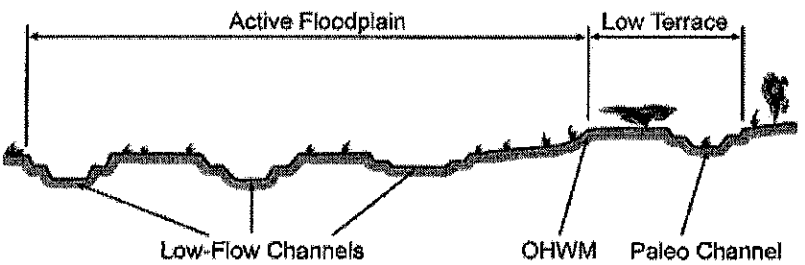
Brief site description:

Channel in a Pinyon-Juniper & Gamble Oak dominated high terrace landscape. Lots of boulders/cobbles from bedrock in channel.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



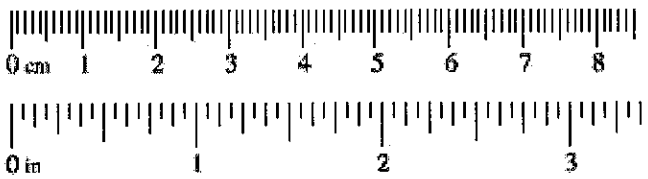
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Ephemeral Stream Channel 4

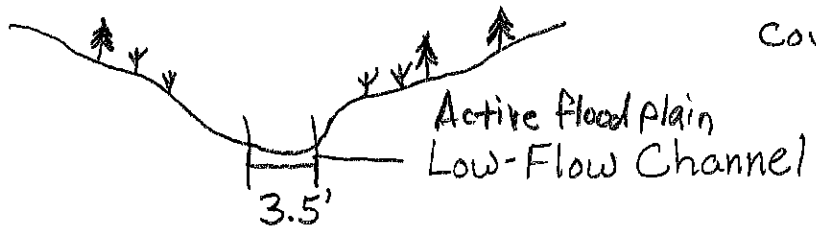
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S15 **Date:** May 5, 2012 **Time:** 10:47am

Cross section drawing:



Low-Flow Channel covers entire Active Floodplain.

U-shaped channel

OHWM = 3.5' wide

OHWM

ESC #4

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [ ] Change in vegetation cover
- [x] Break in bank slope
- [x] Other: wracking
- [ ] Other: _____

Comments:

OHWM indicators are not very distinct. Channel has a step-pool form.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Cobble, minimal rounding of angular/ platy sandstone

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Channel is dominated by bedrock (platy sandstone) that is mostly colluvial material transported minimally.

Ephemeral Stream Channel 4

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S16
Investigator(s): Jeff Boice, Collin Covington

Date: May 5, 2012 **Time:** 11:20 am
Town: Alton **State:** Utah
Photo begin file#: 145 **Photo end file#:** 147

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 369786 m E 4139190 m N

Potential anthropogenic influences on the channel system:

None

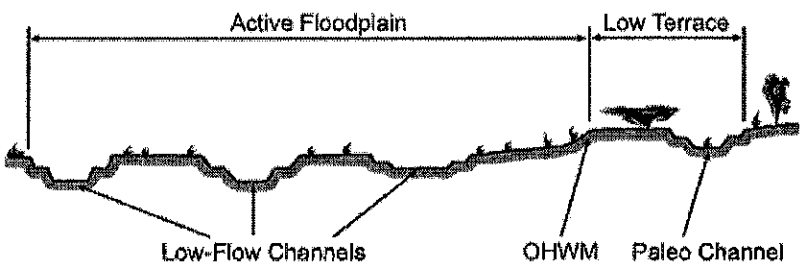
Brief site description:

Sagebrush & upland herbacious vegetation on the high terrace. Open landscape.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

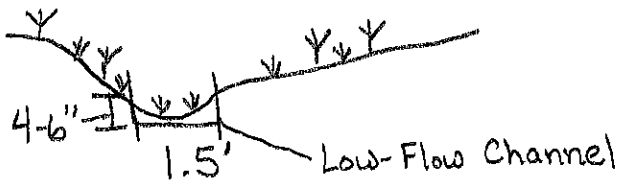
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S16 **Date:** May 5, 2012 **Time:** 11:20 am

Cross section drawing:



Low-Flow Channel covers entire Active Floodplain. U-shaped drainage.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators. Very minimal break in slope, no abrupt change. No evidence of recent flow.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: granule, angular course

Total veg cover: ≥ 1 % Tree: ____ % Shrub: ____ % Herb: ≥ 1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Very poor definition of bed and bank, no abrupt change. Ephemeral upland swale.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S17
Investigator(s): Jeff Boice, Collin Covington

Date: May 5, 2012 **Time:** 12:20 pm
Town: Alton **State:** Utah
Photo begin file#: 153 **Photo end file#:** 155

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: South portion of project area

Projection: UTM **Datum:** NAD83
Coordinates: 369531 mE 4138498 mN

Potential anthropogenic influences on the channel system:

None

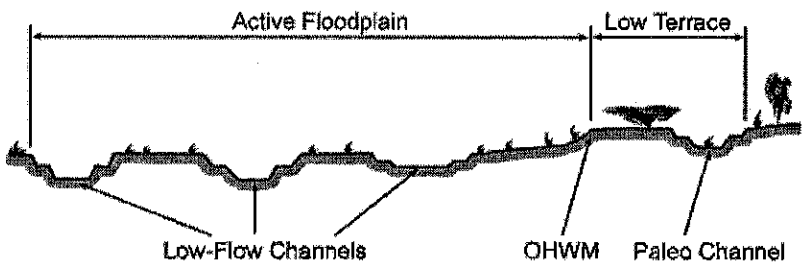
Brief site description:

Deeply incised, V-shaped drainage in a Pinyon-Juniper dominated landscape. Erosional landscape.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

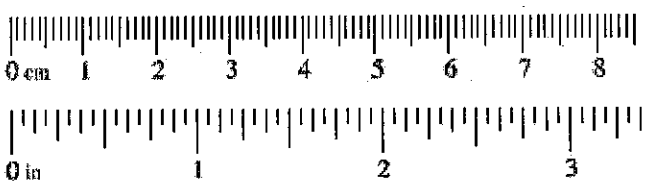


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

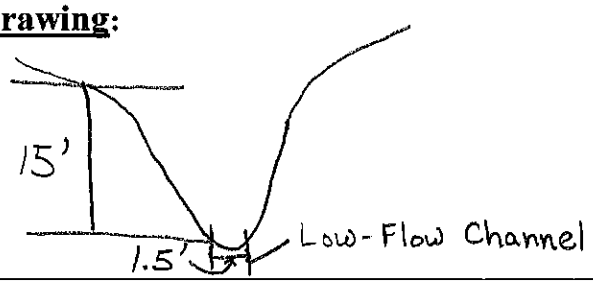
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S17 **Date:** May 5, 2012 **Time:** 12:20 pm

Cross section drawing:



V-shaped channel

Low-Flow Channel covers the entire Active Floodplain

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Erosional sideslopes, pedestalling happening.

Upland drainage swale in erosional landscape.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S18
Investigator(s): Jeff Boice, Collin Covington

Date: May 5, 2012 **Time:** 12:51 pm
Town: Alton **State:** Utah
Photo begin file#: 165 **Photo end file#:** 167

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: South portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 369249 mE 4138496 mN

Potential anthropogenic influences on the channel system:

None

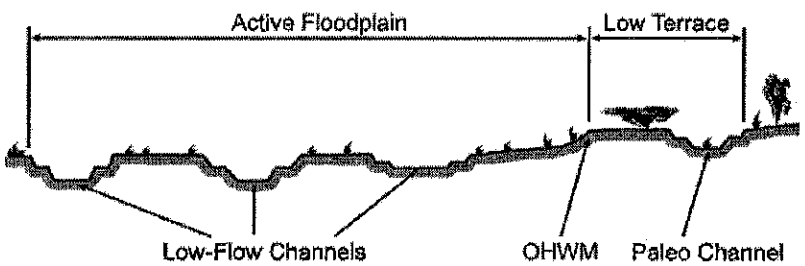
Brief site description:

Pinyon-Juniper, sagebrush, & upland herbacious vegetation on high terrace. Erosional landscape Ephemeral Channel w/ seeps & wetlands in lower portion.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



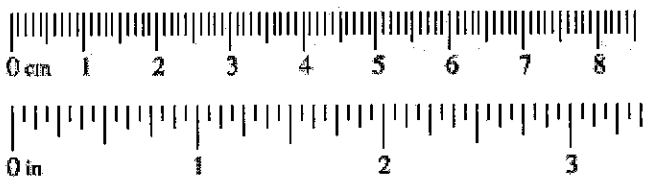
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

Ephemeral stream channel 14

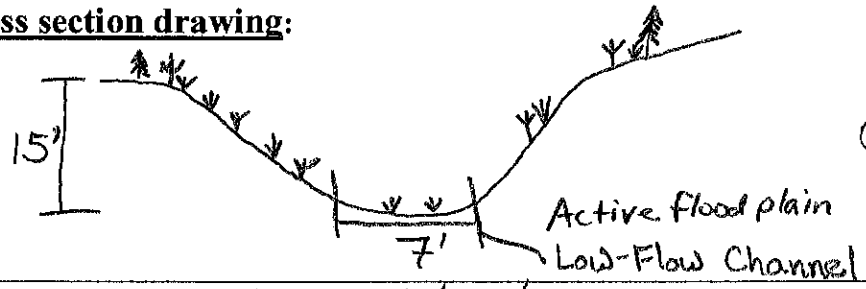
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S18 **Date:** May 5, 2012 **Time:** 12:51 pm

Cross section drawing:



Trough shaped channel, entrenched. Low-Flow Channel covers entire Active Floodplain. No distinct breaks.

OHWM = 7' wide

OHWM

ESC #14

GPS point: See location on front.

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

OHWM is in an entrenched channel and is width of active floodplain and low-flow channel

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: cobble, platy w/ rounding

Total veg cover: 60 % Tree: ____ % Shrub: 5 % Herb: ≥ 1 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [x] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Ephemeral Stream Channel 14. Soil was moist that had evidence of salt wicking, salt on the surfaces of all particles.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S19
Investigator(s): Jeff Boice, Collin Covington

Date: May 5, 2012 **Time:** 3:02 pm
Town: Alton **State:** Utah
Photo begin file#: 181 **Photo end file#:** 183

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Central portion of project area

Projection: UTM **Datum:** NAD83
Coordinates: 369808 mE 4139583 mN

Potential anthropogenic influences on the channel system:

None

Brief site description:

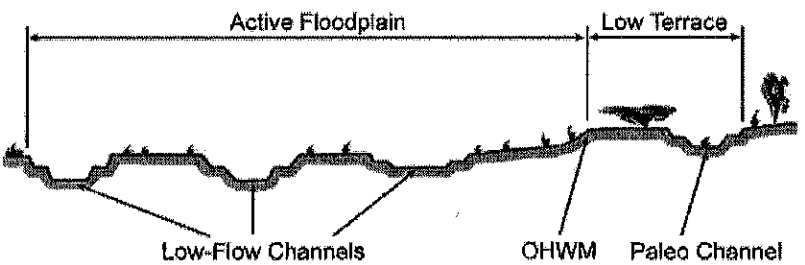
Pinyon-Juniper with upland herbaceous understory, located in an incised hillslope drainage. Rock layers visible.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

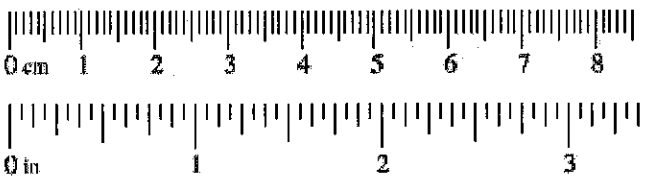


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

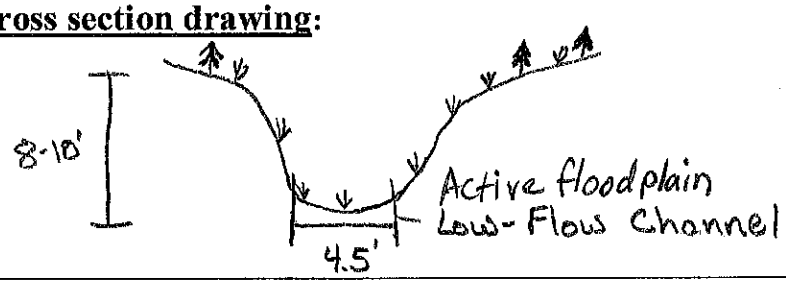
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S19 **Date:** May 5, 2012 **Time:** 3:02 pm

Cross section drawing:



U-shaped drainage of colluvial material

Low-Flow Channel is the Active Floodplain

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: gravel, angular/platy

Total veg cover: ≥1 % Tree: ____ % Shrub: ____ % Herb: ≥1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Most of the material in the drainage is colluvial from the sides. Material isn't transported. No evidence of recent flow. Upland drainage swale.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S20
Investigator(s): Jeff Boice, Collin Covington

Date: May 5, 2012 **Time:** 3:34 pm
Town: Alton **State:** Utah
Photo begin file#: 186 **Photo end file#:** 188

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Central portion of project area

Projection: UTM **Datum:** NAD83
Coordinates: 369773 mE 4139772 mN

Potential anthropogenic influences on the channel system:
Newly constructed county road to the south is potentially adding increased runoff to the system.

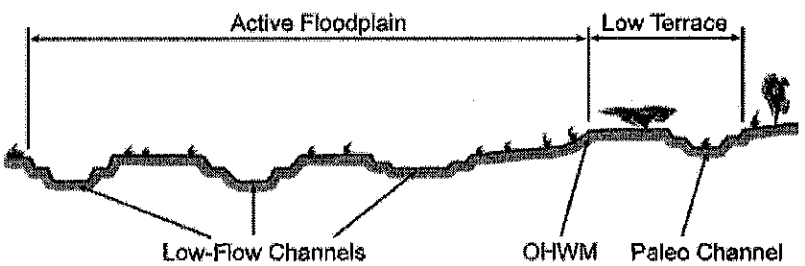
Brief site description:
Sagebrush high terrace with a deeply incised Ephemeral Stream Channel 5.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



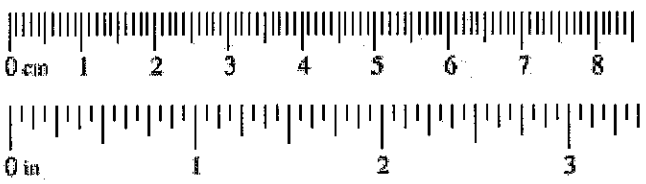
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

Ephemeral Stream Channel 5

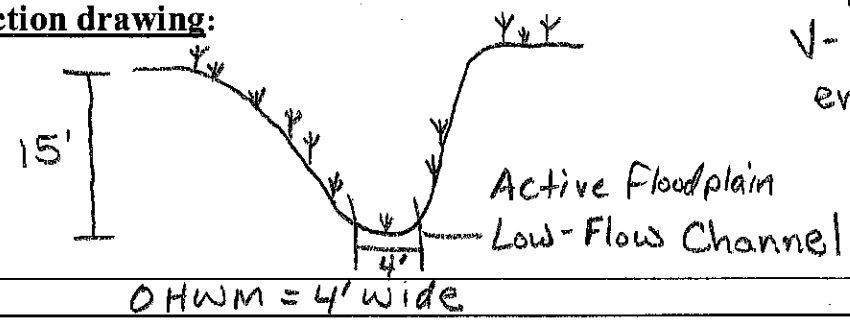
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S20 **Date:** May 5, 2012 **Time:** 3:34 pm

Cross section drawing:



V-shaped drainage entrenched in an upland meadow. Low-Flow channel covers entire Active Floodplain

OHWM ESC #5

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Etching observed on sandy channel bottom from recent flow events.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand, 100%

Total veg cover: >1 % Tree: ____ % Shrub: ____ % Herb: >1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Vegetation is a Poa sp. Evidence of recent flow with surface etching in sand.

Ephemeral Stream Channel 5

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S21, Lower Robinson Creek
Investigator(s): Jeff Boice, Collin Covington

Date: May 5, 2012 **Time:** 3:50 pm
Town: Alton **State:** Utah
Photo begin file#: 189 **Photo end file#:** 191

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area. Lower Robinson Creek.

Projection: UTM **Datum:** NAD 83
Coordinates: 369802 mE 4139856 mN

Potential anthropogenic influences on the channel system:

None

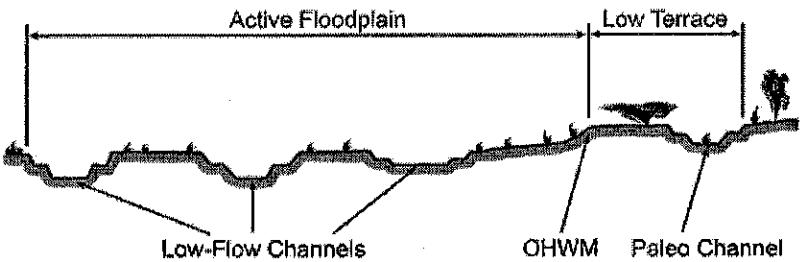
Brief site description:

Sagebrush high terrace meadow that drops into Lower Robinson Creek, entrenched Intermittent Stream Channel 1, w/ floodplain widening.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

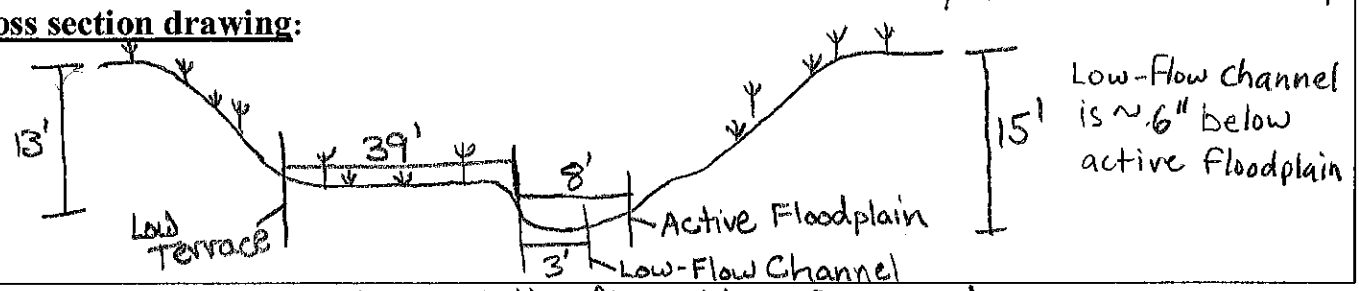
Intermittent Stream Channel 1
Lower Robinson Creek

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0158	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S21 **Date:** May 5, 2012 **Time:** 3:50 pm

Cross section drawing:



OHWM = active floodplain = 8-feet wide

OHWM

ISC #1

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Channel bed saturated across Active Floodplain, salt deposits left on all sediment. Fine material is burying pebbles in Intermittent Stream Channel...

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, rounded

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [x] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [x] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Buried pebbles in the fine material.

Project ID: 421 **Cross section ID:** S 21 **Date:** May 5, 2012 **Time:** 3:50 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, rounded buried in fine material

Total veg cover: ≥1 % Tree: ____ % Shrub: ____ % Herb: ≥1 %

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Salt crusting on outcrops. Moist to nearly saturated.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 80 % Tree: ____ % Shrub: 30 % Herb: 50 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

~ 2' above bottom of channel. No OHWM indicators.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S22
Investigator(s): Jeff Boice, Collin Covington

Date: May 6, 2012 **Time:** 9:10 am
Town: Alton **State:** Utah
Photo begin file#: 202 **Photo end file#:** 204

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 369710 mE 4140092 m N

Potential anthropogenic influences on the channel system:
None

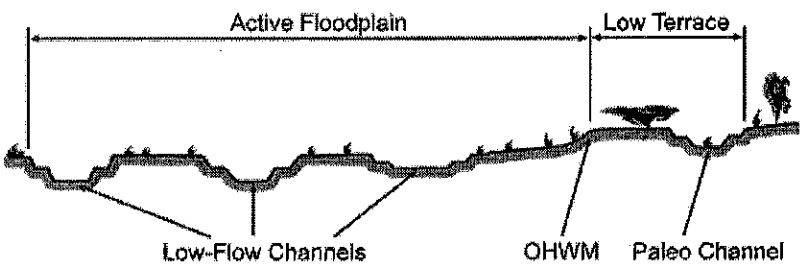
Brief site description:
~20% hillslope in a Pinyon-Juniper, scrub/shrub landscape. Eroded form to show bedrock. The drainage drops into alluvial fan & terminates to overland flow.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies

- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

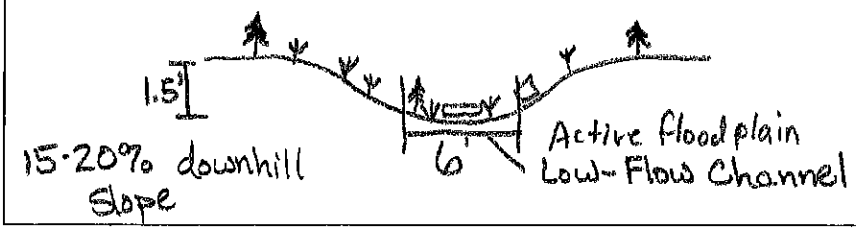
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S22 **Date:** May 6, 2012 **Time:** 9:10 am

Cross section drawing:



U-shaped drainage.

Low-Flow Channel encompasses entire Active Floodplain.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular

Total veg cover: 14 % Tree: 10 % Shrub: 2 % Herb: 2 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☒ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Drainage is not distinct from overall slope. No OHWM. Steep, upland drainage swale. Large boulders present in channel.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S23
Investigator(s): Jeff Boice, Collin Covington

Date: May 6, 2012 **Time:** 9:59 am
Town: Alton **State:** Utah
Photo begin file#: 223 **Photo end file#:** 225

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [X] / N [ ] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 369913 m E 4140059 m N

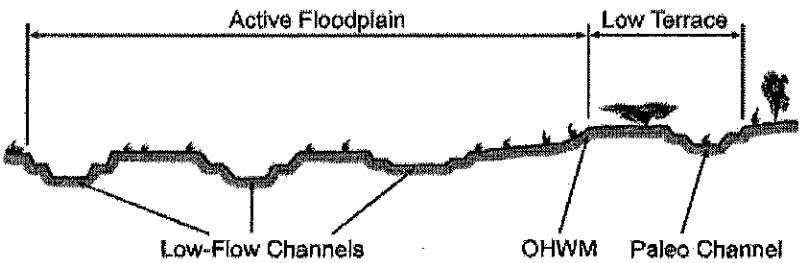
Potential anthropogenic influences on the channel system:
County road has potentially increased fine sediments and concentrated flows.

Brief site description:
Pinyon-Juniper and Sagebrush landscape. Upper portion above culvert is sagebrush & lower end is entrenched, V-shaped channel in sagebrush.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



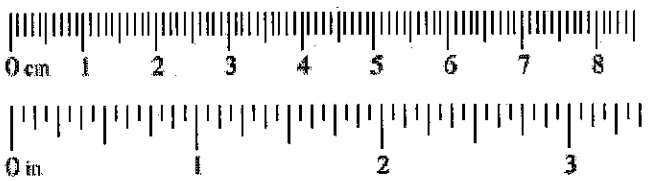
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Ephemeral stream channel 6

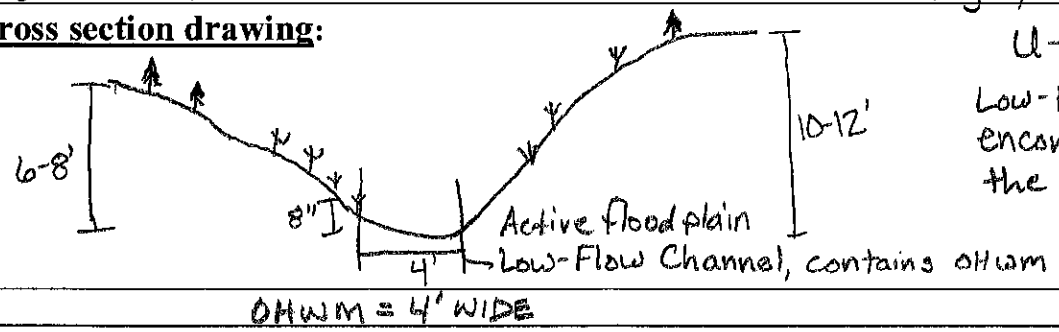
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S23 **Date:** May 6, 2012 **Time:** 9:59 am

Cross section drawing:



U-shaped channel

Low-Flow Channel encompasses all of the Active Floodplain

OHWM ESC #6

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Sidewalls are finer than what's in the channel. Particle size & sorting is minimal.

Ephemeral Stream Channel 6

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, platy & angular

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [x] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Fine sandy material deposits behind obstructions. Thin veneers of fine material on top of cobble. Portions of channel the soil is moist.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S24
Investigator(s): Jeff Boice, Collin Covington

Date: May 6, 2012 **Time:** 11:10 am
Town: Alton **State:** Utah
Photo begin file#: 237 **Photo end file#:** 239

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 370410 mE 4140277m N

Potential anthropogenic influences on the channel system:

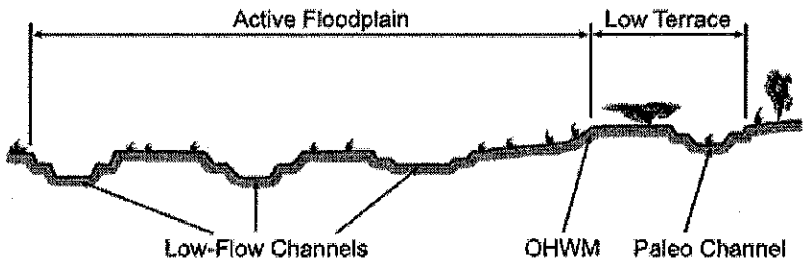
None

Brief site description: Sagebrush high terrace & slopes, deeply incised & actively eroding channel. ~20-25' deep, dissected country with many gully drainages entering channel, no OHWM indicators in those.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



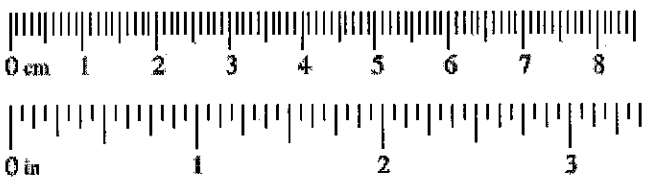
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Ephemeral Stream channel 7

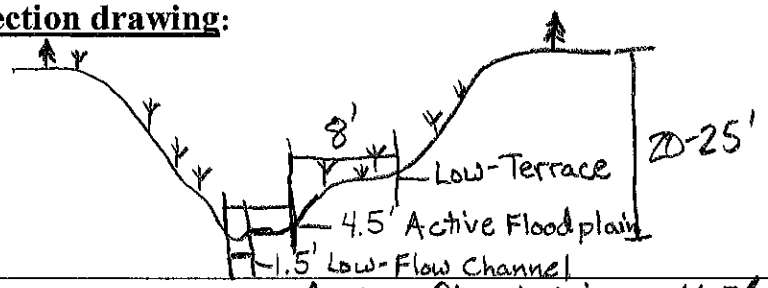
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S24 **Date:** May 6, 2012 **Time:** 11:10 am

Cross section drawing:



OHWM = Active floodplain = 4.5'

OHWM

ESC #7

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover ~Minimal
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Rapid weathering off slopes.

OHWM is present.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: ≥1 % Tree: ____% Shrub: ____% Herb: ≥1 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [x] Mudcracks
- [x] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

—

Project ID: 421 **Cross section ID:** S24 **Date:** May 6, 2012 **Time:** 11:10 am

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course, angular platy

Total veg cover: ≥ 1 % Tree: ____ % Shrub: ____ % Herb: ≥ 1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Rapid erosion.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 70 % Tree: ____ % Shrub: 70 % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

—

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S25
Investigator(s): Jeff Boice, Collin Covington

Date: May 6, 2012 **Time:** 12:10 pm
Town: Alton **State:** Utah
Photo begin file#: 257 **Photo end file#:** 259

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370736 mE 4141033 mN

Potential anthropogenic influences on the channel system:

None

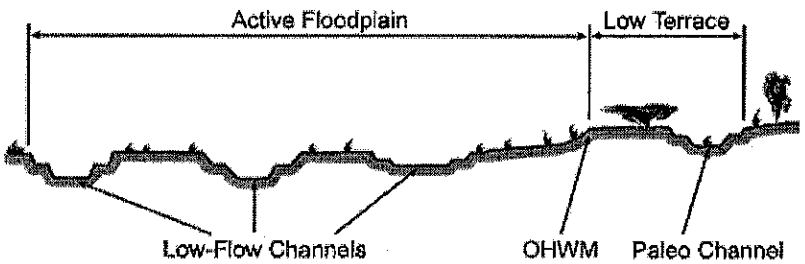
Brief site description:

Pinyon-Juniper & sagebrush high terrace landscape that continues down drainage hillslope.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

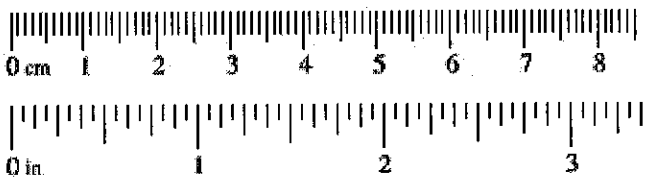


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

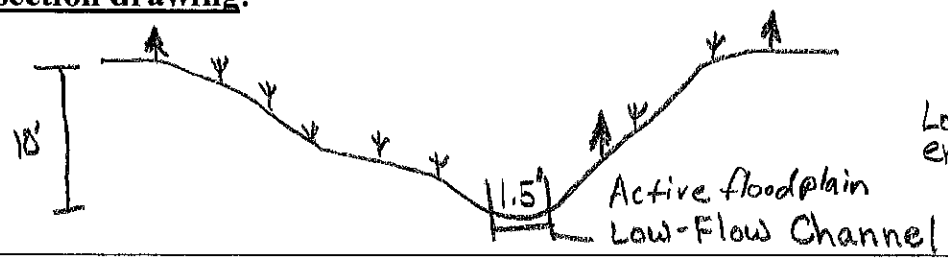
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
			Very fine sand	
1/8	0.0025	0.0625		
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
			Very fine silt	
1/128	0.00015	0.0039		
			Clay	Mud



Project ID: 421 **Cross section ID:** S25 **Date:** May 6, 2012 **Time:** 12:10 pm

Cross section drawing:



U-shaped drainage.
Low-Flow Channel encompasses entire Active Floodplain

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: ≥1 % Tree: ____% Shrub: ____% Herb: ≥1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No evidence of etching from Low-Flows. Loose, unconsolidated sediment. Upland drainage swale.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S26
Investigator(s): Jeff Boice, Collin Covington

Date: May 6, 2012 **Time:** 12:55 pm
Town: Alton **State:** Utah
Photo begin file#: 268 **Photo end file#:** 270

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370637 mE 4140556 mN

Potential anthropogenic influences on the channel system:
None

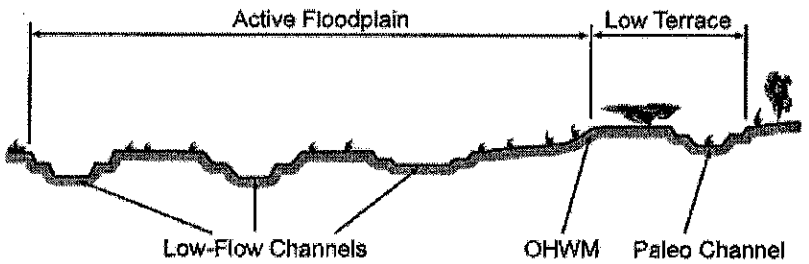
Brief site description:
Sagebrush & upland herbacious vegetation landscape. Multiple flow paths across landscape without OHWM that converge to this central drainage.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

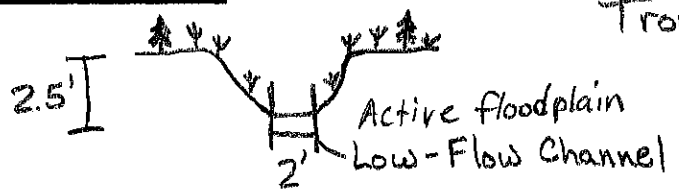
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S26 **Date:** May 6, 2012 **Time:** 12:55 pm

Cross section drawing:



Trough shaped drainage.

Low-Flow Channel encompasses the Active Floodplain

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators. Vegetated hillslope with shrubs.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No evidence of recent flow. Drainage floor is flat, no etching. Upland drainage swale.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S27
Investigator(s): Jeff Boice, Collin Covington

Date: May 6, 2012 **Time:** 1:23 pm
Town: Alton **State:** Utah
Photo begin file#: 278 **Photo end file#:** 280

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 370525 mE 4140344 mN

Potential anthropogenic influences on the channel system:

None

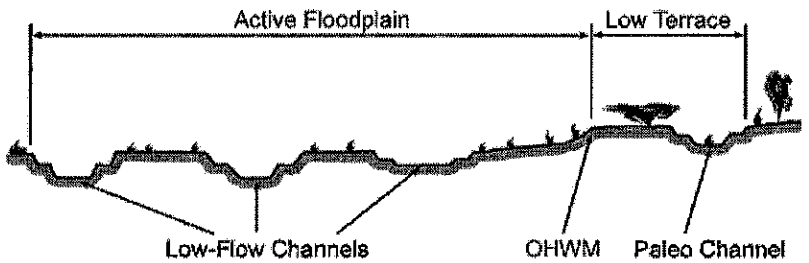
Brief site description:

Juniper, sagebrush, & upland grasses/forbs across the landscape. Entrenched, Ephemeral Stream Channel 8.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



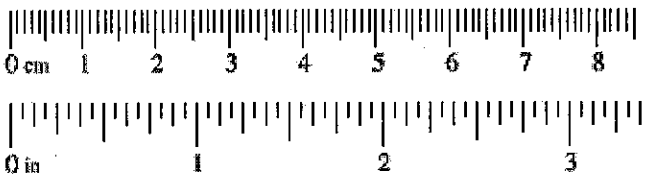
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Ephemeral Stream Channel 8

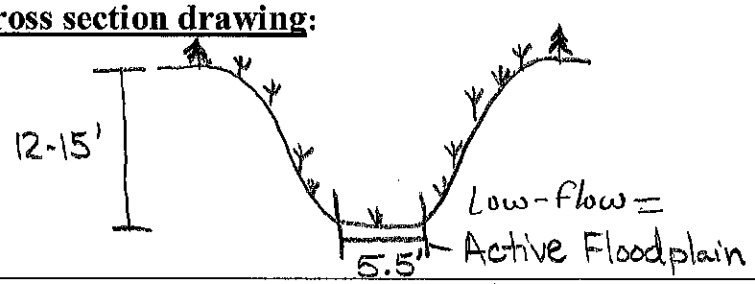
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S27 **Date:** May 6, 2012 **Time:** 1:23 pm

Cross section drawing:



OHWM = 5.5' wide

U-shaped drainage
Trough shaped channel.
Salt effervescence across the channel, soil is moist.

OHWM

ESC #8

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

OHWM is marginal.

Floodplain unit: [ ] Low-Flow Channel [x] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Cobble, angular & platy

Total veg cover: 2 % Tree: ____% Shrub: ____% Herb: 2 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [x] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Marginal channel.

Ephemeral Stream Channel 8

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S28
Investigator(s): Jeff Boice, Collin Covington

Date: May 6, 2012 **Time:** 3:22 pm
Town: Alton **State:** Utah
Photo begin file#: 292 **Photo end file#:** 294

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Western portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 368891 m E 4140661 m N

Potential anthropogenic influences on the channel system:

None

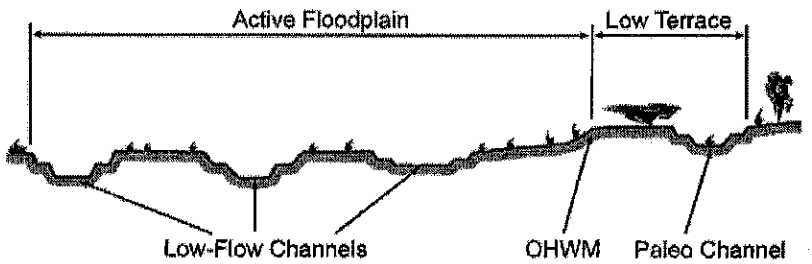
Brief site description:

10% hillslope in a Pinyon-Juniper / Gamble Oak landscape. Drainage is not very prevalent.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

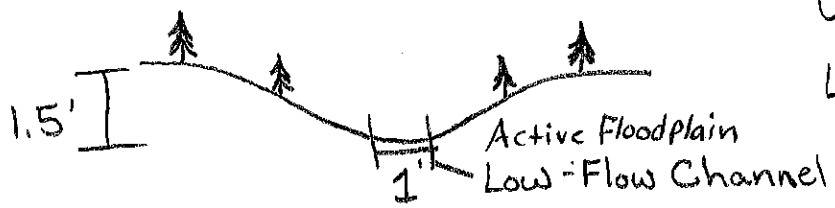
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	
0.157	4	Pebble	
		Granule	
0.079	2.00	Very coarse sand	Sand
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	Silt
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud

Project ID: 421 **Cross section ID:** S28 **Date:** May 6, 2012 **Time:** 3:22 pm

Cross section drawing:



U-shaped drainage.
Low-Flow Channel encompasses the Active Floodplain

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular colluvium

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No indicators, Upland Drainage Swale. Crenulation in topography creates a path for periodic surface water to flow.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S29
Investigator(s): Jeff Boice, Collin Covington

Date: May 6, 2012 **Time:** 3:49 pm
Town: Alton **State:** Utah
Photo begin file#: 301 **Photo end file#:** 303

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: western portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 368905 m E 4140239 m N

Potential anthropogenic influences on the channel system:

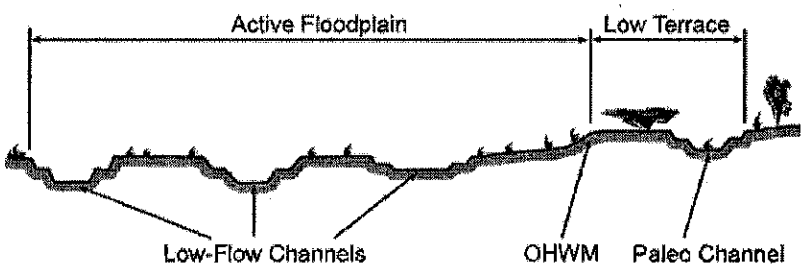
None

Brief site description: Pinyon-Juniper, Sagebrush, Gambel Oak landscape with the incised channel. Sandstone bedrock throughout channel, farther up-channel the particle size includes boulders. Ephemeral Stream Channel 9.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



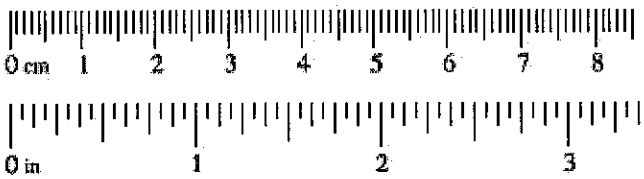
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Ephemeral Stream Channel 9

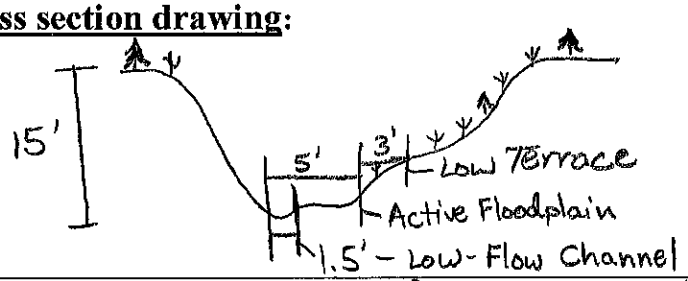
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00	Very coarse sand	Sand
	0.039	1.00	Coarse sand	
	0.020	0.50	Medium sand	
1/2	0.0098	0.25	Fine sand	
1/4	0.005	0.125	Very fine sand	
1/8	0.0025	0.0625	Coarse silt	Silt
1/16	0.0012	0.031	Medium silt	
1/32	0.00061	0.0156	Fine silt	
1/64	0.00031	0.0078	Very fine silt	
1/128	0.00015	0.0039	Clay	Mud



Project ID: 421 **Cross section ID:** S29 **Date:** May 6, 2012 **Time:** 3:49 pm

Cross section drawing:



Trough shaped channel. Deeply incised. Ephemeral Stream Channel 9

OHWM = Active floodplain = 5' wide

OHWM

ESC #9

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope, distinct
- [ ] Other: _____
- [ ] Other: _____

Comments:

Ephemeral channel with OHWM present

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [x] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Commeuts:

Meanders in & out of larger cobble & boulder sized material.

Project ID: 421 **Cross section ID:** S29 **Date:** May 6, 2012 **Time:** 3:49 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Cobble, course angular

Total veg cover: ≥ 1 % Tree: ____ % Shrub: ____ % Herb: ≥ 1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Particle size ranges from boulder to gravel is not well sorted.

Ephemeral Stream Channel 9

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular

Total veg cover: 80 % Tree: ____ % Shrub: 40 % Herb: 40 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No indicators. Minor feature in this system.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S30
Investigator(s): Jeff Boice, Collin Covington

Date: May 6, 2012 **Time:** 4:09 pm
Town: Alton **State:** Utah
Photo begin file#: 304 **Photo end file#:** 307

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Western portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 368940 mE 4140161 m N

Potential anthropogenic influences on the channel system:

None

Brief site description:

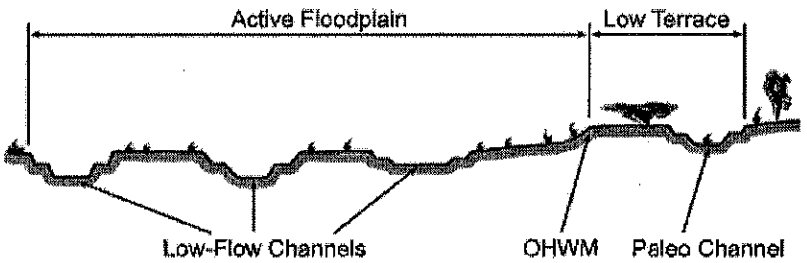
Pinyon-Juniper, Sagebrush, Gambel Oak, minimal upland herbacious vegetation. Incised channel. Ephemeral Stream Channel 15.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

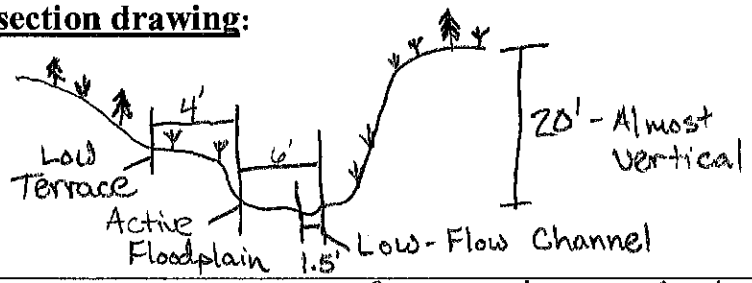
Ephemeral Stream channel 15

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S30 **Date:** May 6, 2012 **Time:** 4:09 pm

Cross section drawing:



Trough shaped channel.

Ephemeral stream channel 15

OHWM = Active floodplain = 6' wide

OHWM

ESC #15

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [ ] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Both banks have ravelling with the change in slope masked by it. Ephemeral flow regime.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, rounded, veneer on large pieces

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [x] Mudcracks
- [x] Ripples
- [x] Drift and/or debris
- [ ] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Very subtle break from Active Floodplain. Etched with cobble & gravel material.

Project ID: 421 **Cross section ID:** S30 **Date:** May 6, 2012 **Time:** 4:09 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, rounded platy

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☒ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Evidence of channel imbrication.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: course, gravel pavement

Total veg cover: 7 % Tree: ____% Shrub: 2 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No indicators

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S31
Investigator(s): Jeff Boice, Collin Covington

Date: May 7, 2012 **Time:** 10:21 am
Town: Alton **State:** Utah
Photo begin file#: 326 **Photo end file#:** 328

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Eastern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 371701 mE 4141097 mN

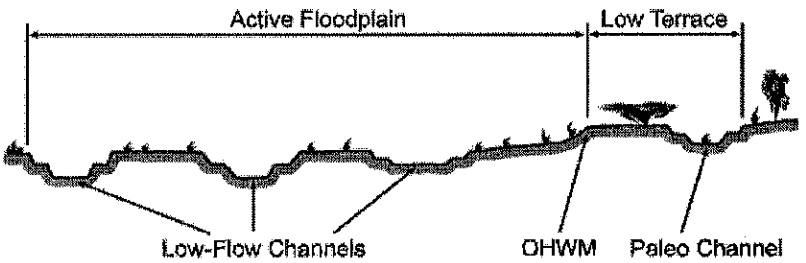
Potential anthropogenic influences on the channel system:
None

Brief site description:
Pinyon-Juniper, Sagebrush, Mahogany, scrub/shrub erosional landscape. Upland drainage swale.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

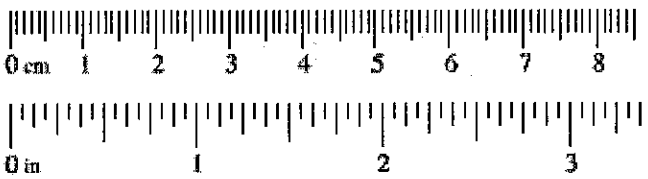


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

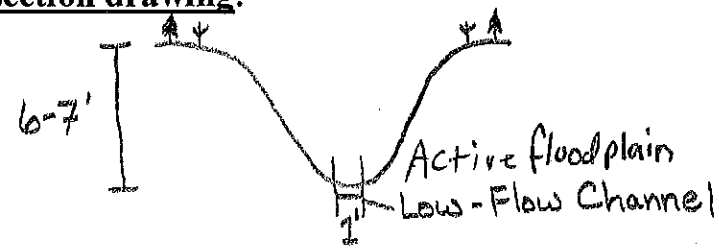
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
			Very fine sand	
1/8	0.0025	0.0625		
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
			Very fine silt	
1/128	0.00015	0.0039		
			Clay	Mud



Project ID: 421 **Cross section ID:** S31 **Date:** May 7, 2012 **Time:** 10:21 am

Cross section drawing:



V-shaped drainage
Low-Flow Channel encompasses entire Active Floodplain

OHWM

GPS point: See location on front.

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular platy

Total veg cover: ≥1 % Tree: ____ % Shrub: ____ % Herb: ≥1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Upland drainage swale, drainage has numerous headcuts indicating active entrenchment. Upper portion of drainage is more vegetated with upland species.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S32
Investigator(s): Jeff Boice, Collin Covington

Date: May 7, 2012 **Time:** 11:02 am
Town: Alton **State:** Utah
Photo begin file#: 336 **Photo end file#:** 338

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Eastern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 371881 mE 4141088 m N

Potential anthropogenic influences on the channel system:

None

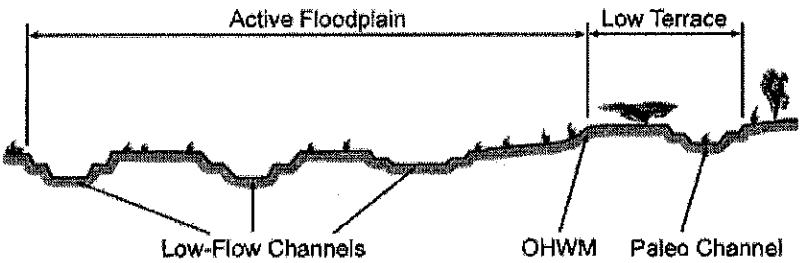
Brief site description:

Pinyon-Juniper, scrub/shrub landscape with a deeply incised upland drainage swale with evidence of mass failures shown in tension cracks.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

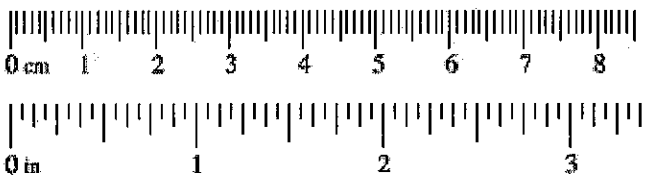


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

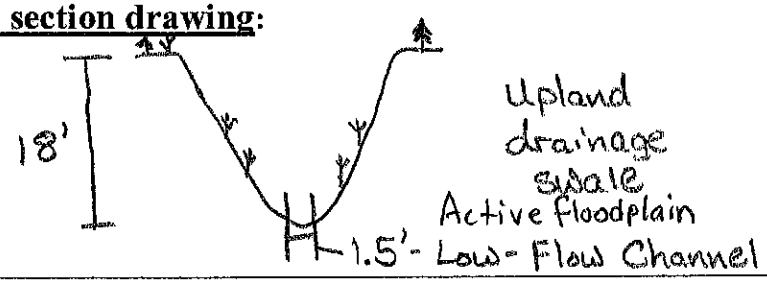
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S32 **Date:** May 7, 2012 **Time:** 11:02 am

Cross section drawing:



V-shaped drainage.
Deep ravelling banks.
Low-Flow Channel encompasses entire Active Floodplain.

OHWM

GPS point: see location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand, same sediment as hillslope

Total veg cover: ≥1 % Tree: ____ % Shrub: ____ % Herb: ≥1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Recent flow indicated by minimal scouring. No indications of more frequent flow. Upland drainage swale.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S33, Lower Robinson Creek
Investigator(s): Jeff Boice, Collin Covington

Date: May 7, 2012 **Time:** 12:07 pm
Town: Alton **State:** Utah
Photo begin file#: 348 **Photo end file#:** 350

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Eastern portion of project area. Lower Robinson Creek

Projection: UTM **Datum:** NAD83
Coordinates: 371806 m E 4140701 m N

Potential anthropogenic influences on the channel system:

None

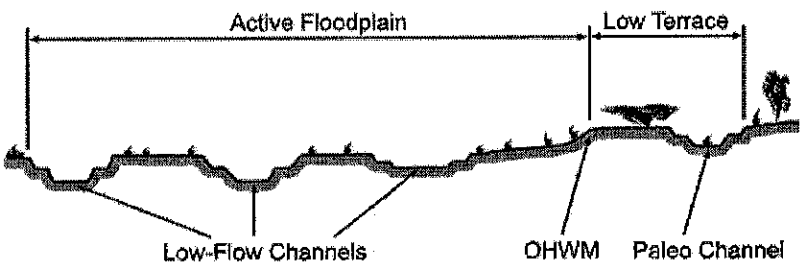
Brief site description:

Pinyon-Juniper, sagebrush, upland herbacious vegetated landscape. Deeply entrenched ~40', mass slumping along creek. Intermittent Stream Channel 1 upper portion

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



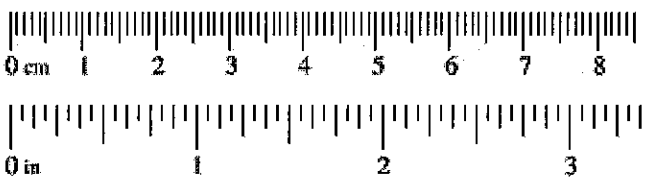
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

Intermittent Stream Channel 1
Lower Robinson Creek

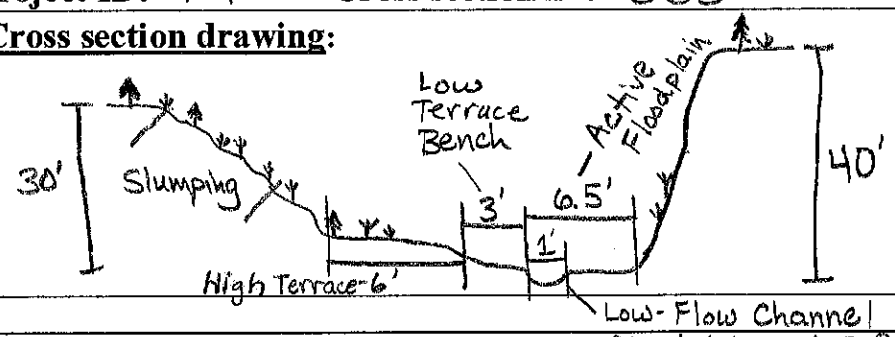
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S33 **Date:** May 7, 2012 **Time:** 12:07 pm

Cross section drawing:



Low-Flow Channel is ~2" below the Active Floodplain.

Salt effervescence on on the soil & rocks in the channel.

OHWM OHWM = active floodplain = 6.5 feet wide

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

OHWM present. Channel is located in the Intermittent Stream Channel 1.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: granule, rounded

Total veg cover: ≥1 % Tree: ____ % Shrub: ____ % Herb: ≥1 %

Community successional stage:

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [x] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Excess of sediment buries the courser material. Sediment is saturated.

Project ID: 421 **Cross section ID:** S33 **Date:** May 7, 2012 **Time:** 12:07 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular

Total veg cover: Ø % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Fine material (sand) is saturated.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: sand

Total veg cover: 33 % Tree: ____ % Shrub: 30 % Herb: 3 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris on edge w/ AFP
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Depositional sand, transient terrace.

Ephemeral stream channel 10

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S34
Investigator(s): Jeff Boice, Collin Covington

Date: May 7, 2012 **Time:** 2:17 pm
Town: Alton **State:** Utah
Photo begin file#: 376 **Photo end file#:** 378

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Eastern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 371244 m E 4141808 m N

Potential anthropogenic influences on the channel system:

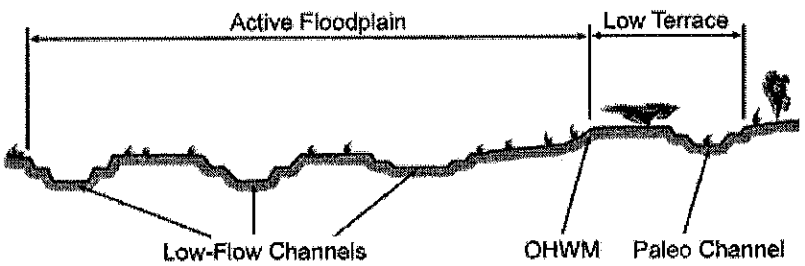
None

Brief site description:
Pinyon-Juniper, scrub/shrub, sagebrush, upland herbacious landscape with multiple drainages lacking OHWM's feeding NHD. Ephemeral stream Channel 10

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

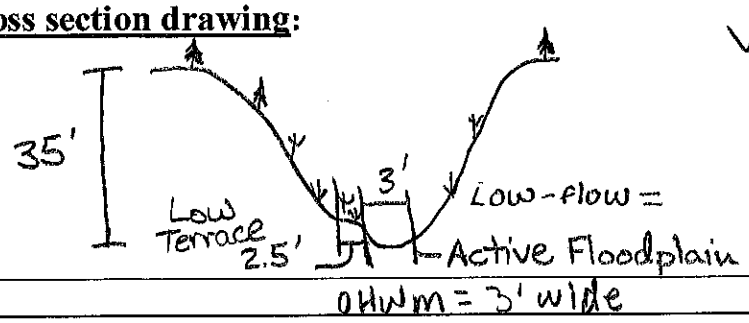
Ephemeral Stream channel 10

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S34 **Date:** May 7, 2012 **Time:** 2:17 pm

Cross section drawing:



V-shaped drainage

Salt effervescence across bottom of channel.

Moist soils in the bottom

OHWM

ESC #10

GPS point: see location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Minimal Indicators of an OHWM

Floodplain unit: [ ] Low-Flow Channel [x] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Fine Sand

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [x] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

No change in particle size across the landscape, bottom, slopes, & terrace.

Ephemeral Stream Channel 10

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S35
Investigator(s): Jeff Boice, Collin Covington

Date: May 7, 2012 **Time:** 3:40 pm
Town: Alton **State:** Utah
Photo begin file#: 404 **Photo end file#:** 406

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370684 m E 4141791 m N

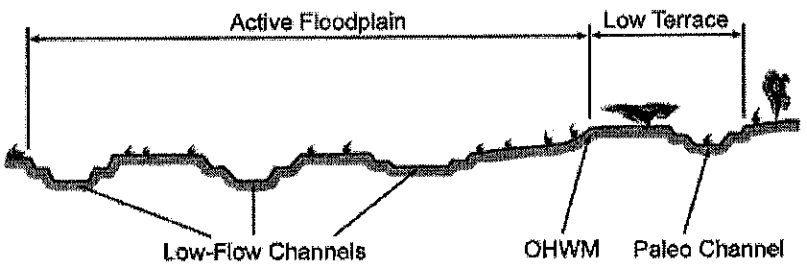
Potential anthropogenic influences on the channel system:
Road is a potential influence blocking the drainage from the upper portion of the system (no culvert under road)

Brief site description:
Alfalfa, Bromus inermis, & sagebrush meadow with a gentle depression. Early stages of entrenchment. Upland drainage swale.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

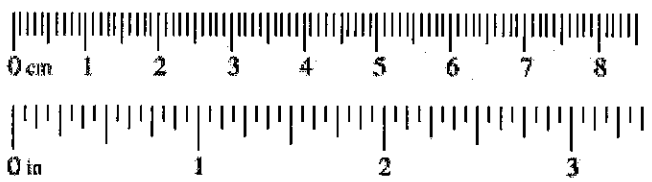


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

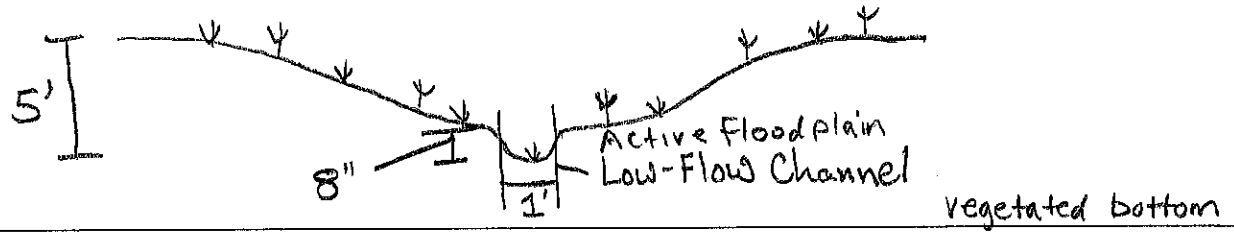
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S35 **Date:** May 7, 2012 **Time:** 3:40 pm

Cross section drawing:



OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: sand

Total veg cover: 1 % Tree: ____ % Shrub: ____ % Herb: 1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low-Flow Channel is not distinct. Flow is marginal and sporadic. Drainage is small & cut off from upper portion by road. Upland drainage swale.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: 536
Investigator(s): Jeff Boice, Collin Covington

Date: May 7, 2012 **Time:** 4:36 pm
Town: Alton **State:** Utah
Photo begin file#: 417 **Photo end file#:** 419

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 370280 mE 4141864 mN

Potential anthropogenic influences on the channel system:

None

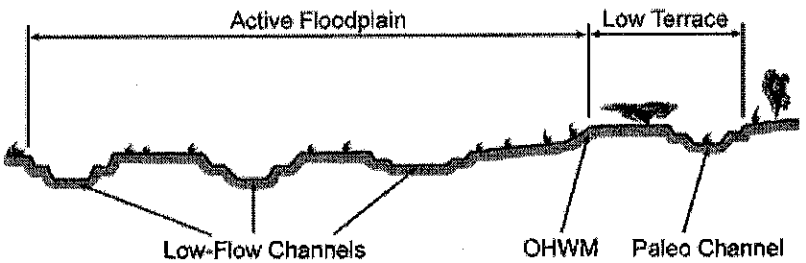
Brief site description:

Deeply entrenched channel in an alfalfa, sagebrush, & Juniper meadow. Ephemeral Stream Channel 11

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



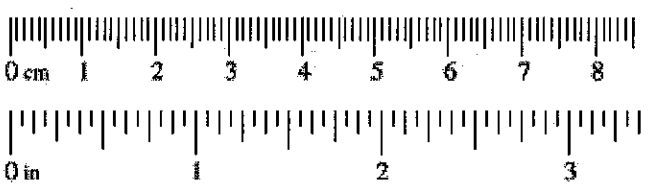
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Ephemeral Stream Channel 11

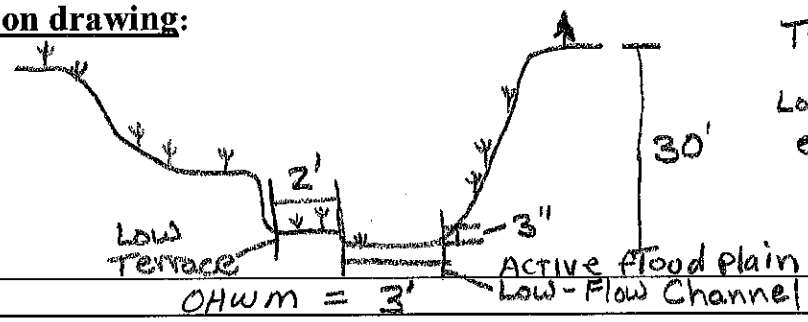
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S36 **Date:** May 7, 2012 **Time:** 4:36 pm

Cross section drawing:



Trough shaped channel.
Low-Flow Channel encompasses entire Active Floodplain.

OHWM ESC #11

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Sediment similar across the landscape. Erosional area. Etched with distinct cuts for OHWM on banks.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: ≥1 % Tree: ____% Shrub: ____% Herb: ≥1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Alkaline bottom, salt effervescence present. Fine material (silt) Contains multiple narrow channels.

Ephemeral Stream Channel 11

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S37
Investigator(s): Jeff Boice, Covington

Date: May 8, 2012 **Time:** 10:12 am
Town: Alton **State:** Utah
Photo begin file#: 446 **Photo end file#:** 448

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Eastern portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 371602 m E 4142351 m N

Potential anthropogenic influences on the channel system:

None

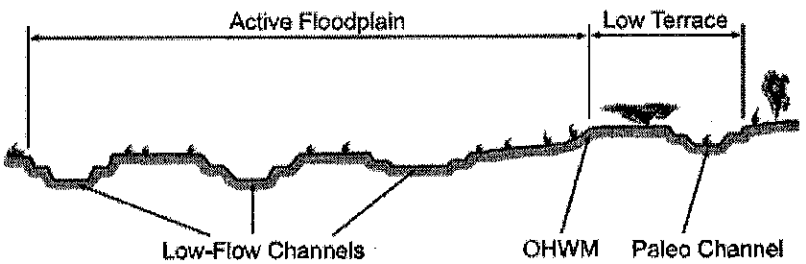
Brief site description:

Pinyon-Juniper & Mahogany dominated hillslope with a slope of ~30%. Deeply incised, ravelling on both walls. Upland drainage swale.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

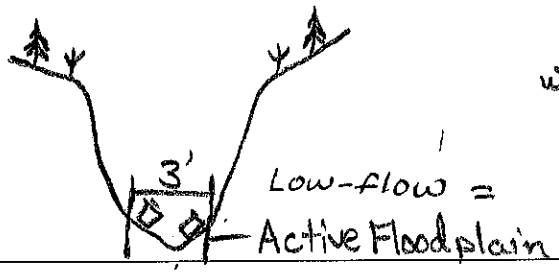
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	Sand
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	Silt
1/32 0.00061	0.0156	Medium silt	
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud

Project ID: 421 **Cross section ID:** S37 **Date:** May 8, 2012 **Time:** 10:12 am

Cross section drawing:

Silt material & large boulders of sandstone in drainage.



V-shaped drainage with mass wasting.

Steep, headwall drainage.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: sand

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Mix of fine material w/ cobbles & boulders. Ravelling from both banks obscures any (if present) floodplain features. Rapidly eroding.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S38
Investigator(s): Jeff Boice, Collin Covington

Date: May 8, 2012 **Time:** 10:28 am
Town: Alton **State:** Utah
Photo begin file#: 453 **Photo end file#:** 455

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Eastern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 371476 mE 4142386 mN

Potential anthropogenic influences on the channel system:

None

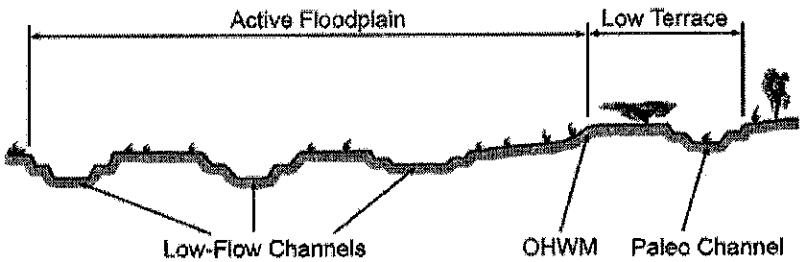
Brief site description:

Pinyon-Juniper & Mahogany dominated hillslope that is rapidly eroding & incised Upland drainage swale.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

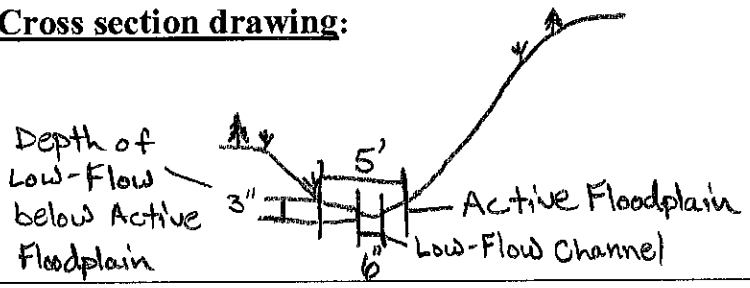
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S38 **Date:** May 8, 2012 **Time:** 10:28 am

Cross section drawing:



Trough shaped drainage. Ravelling along both banks. Boulders mixed in drainage bottom.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Ravelling from bank makes break indistinct.

Project ID: 421 **Cross section ID:** S38 **Date:** May 8, 2012 **Time:** 10:28 am

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Indicators were not distinct as was the breaks.

upland drainage swale.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____% Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S39
Investigator(s): Jeff Boice, Collin Covington

Date: May 8, 2012 **Time:** 10:45 am
Town: Alton **State:** Utah
Photo begin file#: 457 **Photo end file#:** 459

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Eastern portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 371529 m E 4142438 m N

Potential anthropogenic influences on the channel system:

None

Brief site description:

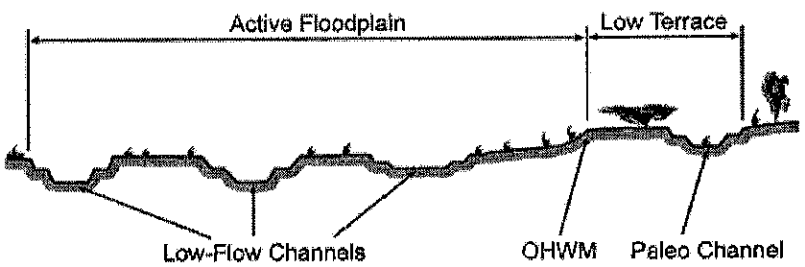
Pinyon-Juniper & Mahogany dominated landscape in a steep drainage with a slope of ~40-50%. upland drainage swale

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies

- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

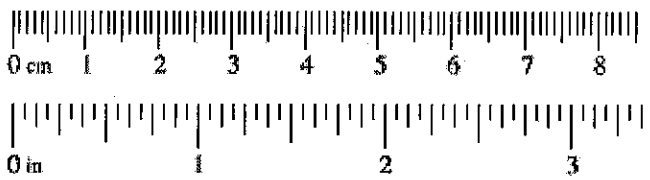


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Wentworth Size Classes

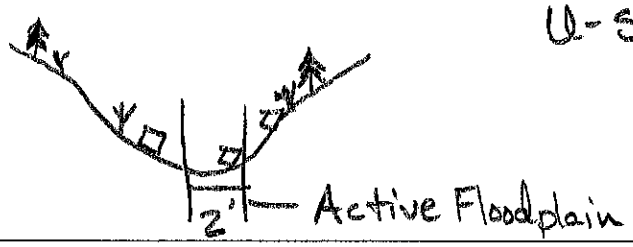
Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S39 **Date:** May 8, 2012 **Time:** 10:45 am

Cross section drawing:

Drainage filled w/ boulders & cobble.



U-shaped drainage

No Low-Flow Channel discernible

OHWM

GPS point: See front for location

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Cobble, Course angular

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Steep, upland drainage swale that has no evidence of recent flow.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S40
Investigator(s): Jeff Boice, Collin Covington

Date: May 8, 2012 **Time:** 11:15 am
Town: Alton **State:** Utah
Photo begin file#: 468 **Photo end file#:** 470

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Eastern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 371603 m E 4142548 m N

Potential anthropogenic influences on the channel system:

None

Brief site description:

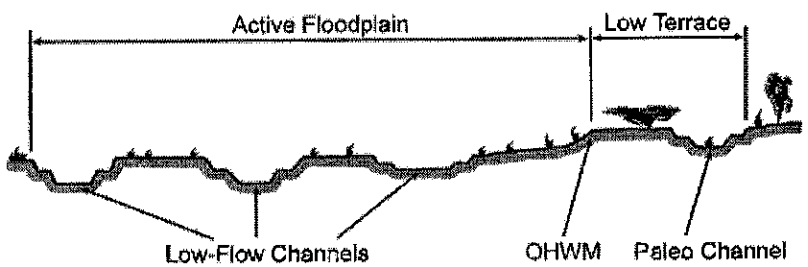
Pinyon-Juniper & Mahogany dominated landscape that has a steep hillslope drainage cutting through rock. Upland drainage swale

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies

- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

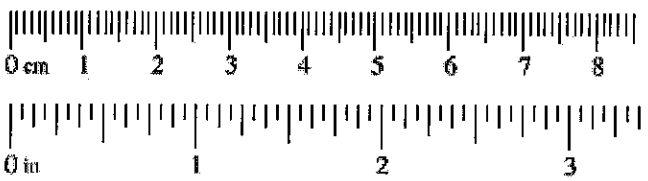


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

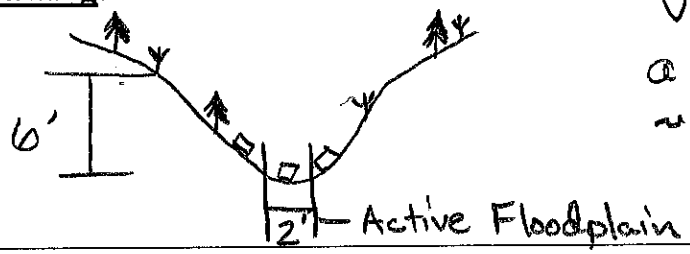
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S40 **Date:** May 8, 2012 **Time:** 11:15 am

Cross section drawing:



V-shaped drainage on a hillslope w/ an ~ 30-40% gradient.

No Low-Flow Channel discernible

OHWM

GPS point: See front for location

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators

Floodplain unit:

☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, Course angular

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Steep upland drainage swale with no evidence of recent flow.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: 641
Investigator(s): Jeff Boice, Collin Covington

Date: May 8, 2012 **Time:** 11:39 am
Town: Alton **State:** Utah
Photo begin file#: 476 **Photo end file#:** 478

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Eastern portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 371568 m E 4142561 m N

Potential anthropogenic influences on the channel system:

None

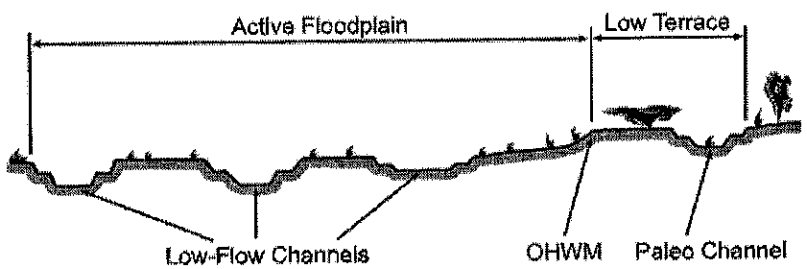
Brief site description:

Pinyon-Juniper & Mahogany dominated landscape in a steep channel that receives input from multiple minor drainages. Ephemeral Stream Channel 11

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

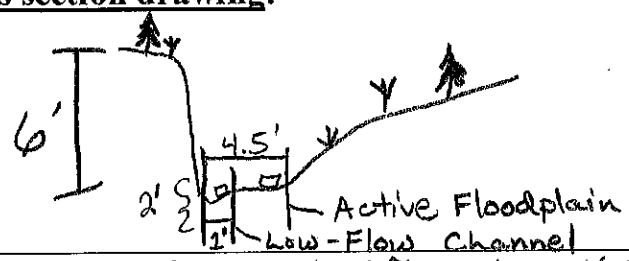
Ephemeral Stream channel 11

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S41 **Date:** May 8, 2012 **Time:** 11:39 am

Cross section drawing:



OHWM = Low flow channel = 1' WIDE

Left bank is a vertical face w/ minor ravelling. Right bank has a ~20% slope out of channel. Step-pool system w/ bedrock & boulders.

OHWM ESC #11

GPS point: See front for location

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

OHWM is not very distinct.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, Course angular

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

~2" deeper than the active floodplain. No evidence of sorting.

Project ID: 421 **Cross section ID:** S41 **Date:** May 8, 2012 **Time:** 11:39 am

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular platy

Total veg cover: ≥1 % Tree: ____ % Shrub: ____ % Herb: ≥1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

—

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S42
Investigator(s): Jeff Boice, Collin Covington

Date: May 14, 2012 **Time:** 3:02 pm
Town: Alton **State:** Utah
Photo begin file#: 538 **Photo end file#:** 540

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 369853 mE 4141175 mN

Potential anthropogenic influences on the channel system:
Contributing area of headwaters is gravel pit access road.

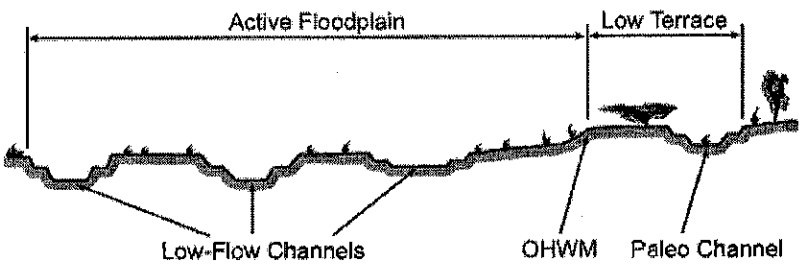
Brief site description:
Pinyon-Juniper & sagebrush landscape on hillslope & upland meadow terrain with an incised channel. Channel begins at road crossing.
Ephemeral Stream Channel 12

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies

- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



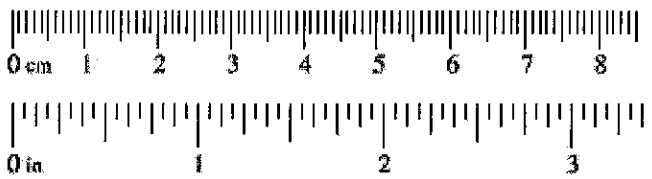
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

Ephemeral Stream Channel 12

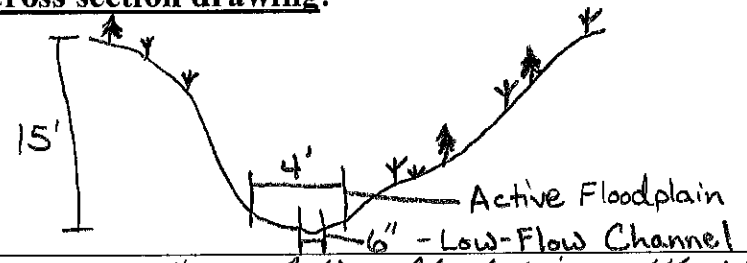
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	Sand
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	Silt
1/32 0.00061	0.0156	Medium silt	
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



Project ID: 421 **Cross section ID:** S42 **Date:** May 14, 2012 **Time:** 3:02 pm

Cross section drawing:



U-shaped Channel

Ephemeral Stream Channel 12

OHWM = Active Floodplain = 4' WIDE

OHWM

ESC #12

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

OHWM present. Ephemeral Stream Channel 12

Floodplain unit:

- [x] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, angular, slightly rounded

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [x] Mudcracks
- [x] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Dominated by small gravel (pebble) with fine material mixed in.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, angular, slightly rounded

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Does not have the fine material in the floodplain area like the Low-Flow Channel.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____% Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S43
Investigator(s): Jeff Boice, Collin Covington

Date: May 14, 2012 **Time:** 3:35 pm
Town: Alton **State:** Utah
Photo begin file#: 544 **Photo end file#:** 546

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Central portion of project area

Projection: UTM **Datum:** NAD 83
Coordinates: 370157 m E 4141412 m N

Potential anthropogenic influences on the channel system:

None

Brief site description:

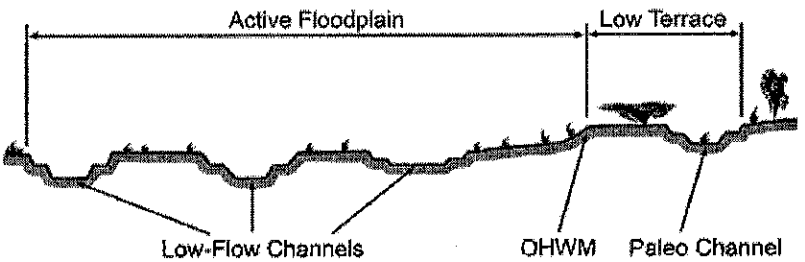
Pinyon/Juniper & Sagebrush meadow. PJ was cleared in the past. The drainage is an upland Drainage Swale.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

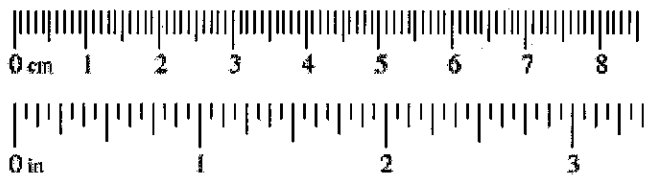


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

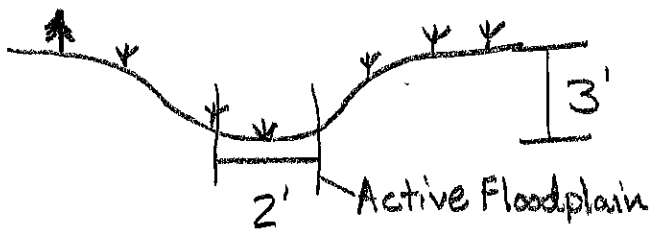
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S43 **Date:** May 14, 2012 **Time:** 3:35 pm

Cross section drawing:



Trough shaped drainage

No Low-Flow Channel present

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Sparsely vegetated drainage bottom

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 5 % Tree: ____ % Shrub: ____ % Herb: 5 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Cannot discern a Low-Flow Channel. No sorting or indications of regular flow.

Upland Drainage Swale

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S44
Investigator(s): Jeff Boice, Collin Covington

Date: May 14, 2012 **Time:** 4:31 pm
Town: Alton **State:** Utah
Photo begin file#: 561 **Photo end file#:** 564

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Central portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 369479 mE 4141293 m N

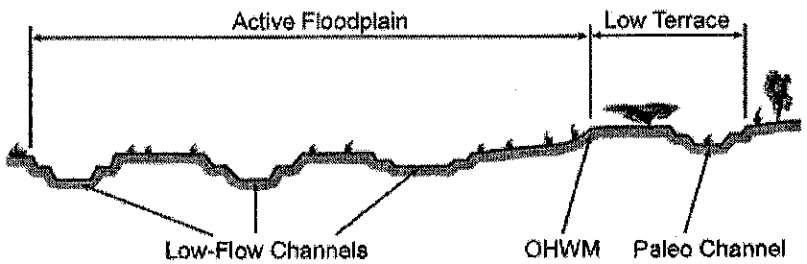
Potential anthropogenic influences on the channel system:
None

Brief site description: Pinyon/Juniper & sagebrush terrace, the PJ to the east has recently been cleared. The drainage is entrenched ~10' & has a wet meadow bottom, the channel is narrow & entrenched. Intermittent Stream Channel 2.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



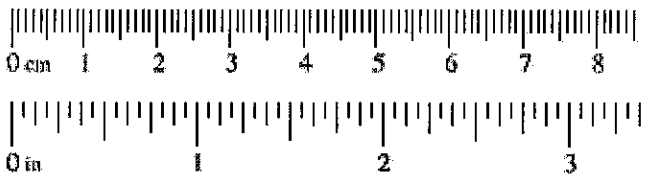
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

Intermittent Stream Channel 2

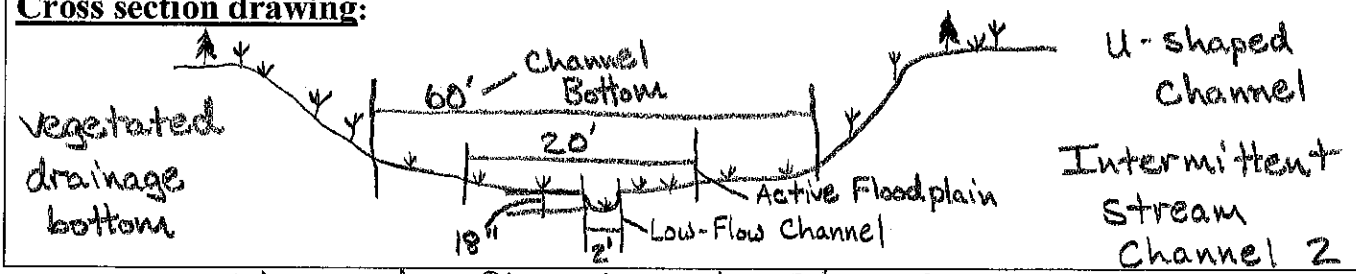
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0150	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S 44 **Date:** May 14, 2012 **Time:** 4:31 pm

Cross section drawing:



OHWM = low flow channel = 2' WIDE

OHWM /SC#2

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Definitive break in slope.

Active floodplain is vegetated with riparian wetmeadow wetland.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 80 % Tree: ____ % Shrub: ____ % Herb: 80 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Very narrow width-to-depth ratio. Indications of entrenchments in the lower channel. Rock placed in channel at certain points in upper drainage.

Project ID: 421 **Cross section ID:** S44 **Date:** May 14, 2012 **Time:** 4:31 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: 100 % Tree: ____ % Shrub: ____ % Herb: 100 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Completely vegetated with Juncus sp. & Hordeum jubatum.
Cannot see beneath the vegetation.

Intermittent Stream Channel 2

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No abandoned terrace features

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S45
Investigator(s): Jeff Boice, Collin Covington

Date: May 15, 2012 **Time:** 10:33 am
Town: Alton **State:** Utah
Photo begin file#: 594 **Photo end file#:** 596

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Western portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 369370 mE 4141905 m N

Potential anthropogenic influences on the channel system:

None

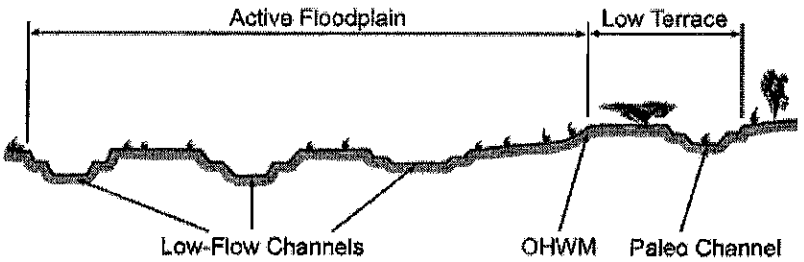
Brief site description:

Pinyon/Juniper, Gamble oak, Sagebrush hillslope with a trough shaped drainage that is stepping down hill through rock. Ephemeral Stream Channel 13

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



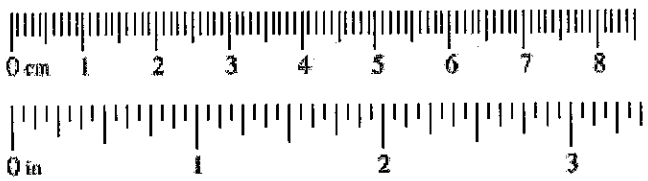
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Ephemeral Stream Channel 13

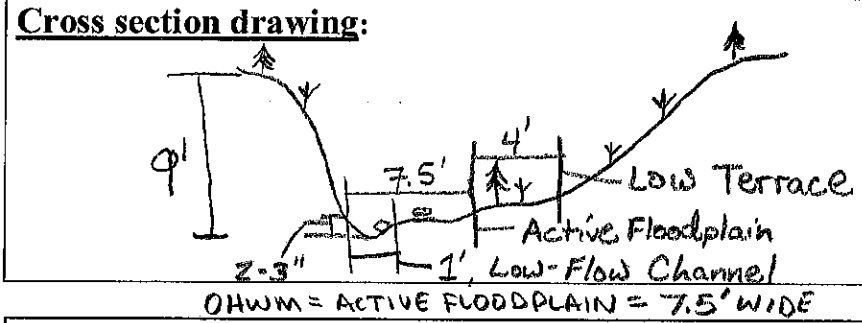
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S45 **Date:** May 15, 2012 **Time:** 10:33 am

Cross section drawing:



Trough Shaped Channel with some cobbles in the Active Floodplain

Ephemeral Stream Channel 13

OHWM

ESC #13

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [ ] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Step-pool system cutting through rock formations with ponding and splash-zones.

Floodplain unit:

- [x] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course platy rounding

Total veg cover: ≥1 % Tree: ____% Shrub: ____% Herb: ≥1 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [x] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [x] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Low-Flow Channel is ~2-3" lower than Active Floodplain

Project ID: 421 **Cross section ID:** S45 **Date:** May 15, 2012 **Time:** 10:33 am

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course platy rounded

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 15 % Tree: ____% Shrub: 10 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S46
Investigator(s): Jeff Boice, Collin Covington

Date: May 15, 2012 **Time:** 11:23 am
Town: Alton **State:** Utah
Photo begin file#: 606 **Photo end file#:** 608

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 370176 m E 4142190 m N

Potential anthropogenic influences on the channel system: Appears drainage has been diverted/ Cut off into NHD to the north, there is ~15' difference in depth between the two. Does not appear to be active. Upper end of upland drainage swale is no longer connected to drainage area.

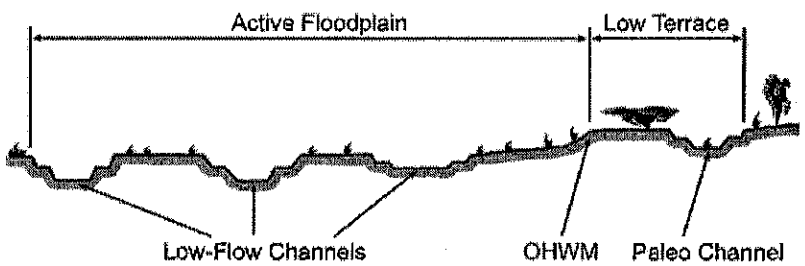
Brief site description:

Sagebrush and Alfalfa upland meadow with an upland Drainage Swale

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	
0.157	4	Pebble	
		Granule	
0.079	2.00		
0.039	1.00	Very coarse sand	Sand
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	Silt
1/32 0.00061	0.0156	Medium silt	
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud

Project ID: 421 **Cross section ID:** 546 **Date:** May 15, 2012 **Time:** 11:23 am

Cross section drawing:

U-shaped drainage.

No evidence of any flow or Floodplain Units.

OHWM

GPS point: See location on front.

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

None, no OHWM indicators present.

Vegetated swale

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

No Floodplain Units

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 70 % Tree: ____ % Shrub: ____ % Herb: 70 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Drainage is a swale that has been cut-off from upper watershed. Vegetation found in drainage includes: Western wheatgrass, alfalfa, common dandelion, Achillea millefolium, Trifolium sp., Poa sp., & unknown forb.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S47
Investigator(s): Jeff Boice, Collin Covington

Date: May 15, 2012 **Time:** 11:46 am
Town: Alton **State:** Utah
Photo begin file#: 616 **Photo end file#:** 618

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370143 mE 4142219 mN

Potential anthropogenic influences on the channel system:

Runoff from county road that crosses drainage.

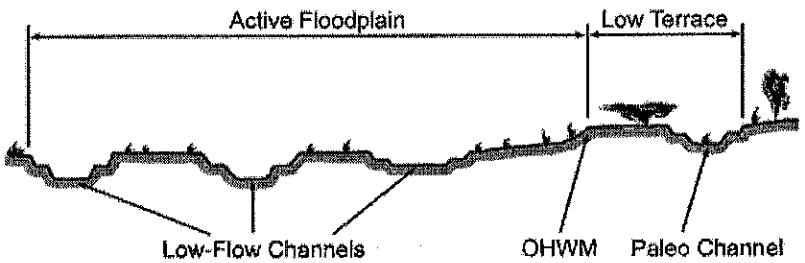
Brief site description:

Deeply incised, V-shaped drainage in a sagebrush & alfalfa meadow. Evidence of mass failure. Bed & wall material are same. Upland drainage swale

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

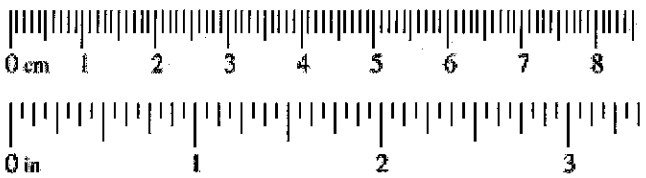


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

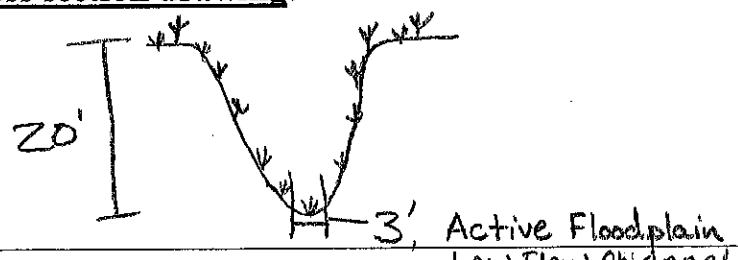
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	Sand
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	Silt
1/32 0.00061	0.0156	Medium silt	
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



Project ID: 421 **Cross section ID:** S47 **Date:** May 15, 2012 **Time:** 11:46 am

Cross section drawing:



V-shaped Drainage

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators

NO DISTINCT CHANNEL CHARACTERISTICS

Floodplain unit:

☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: 1 % Tree: ____ % Shrub: ____ % Herb: 1 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No indicators, not a channel.

Upland drainage swale

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S48
Investigator(s): Jeff Boice, Collin Covington

Date: May 15, 2012 **Time:** 1:27 pm
Town: Alton **State:** Utah
Photo begin file#: 642 **Photo end file#:** 644

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 370871 mE 4142928 mN

Potential anthropogenic influences on the channel system:

None

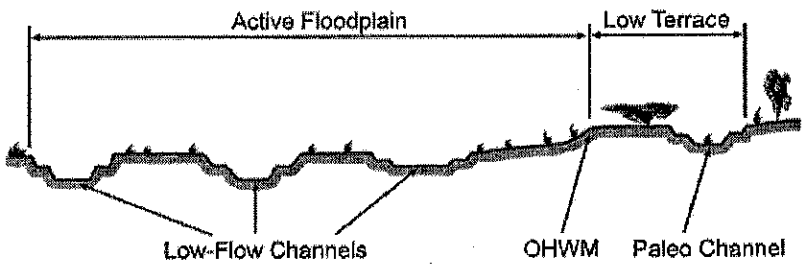
Brief site description:

Pinyon/Juniper and sagebrush hill area with entrenched gully drainage. Upland drainage swale

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

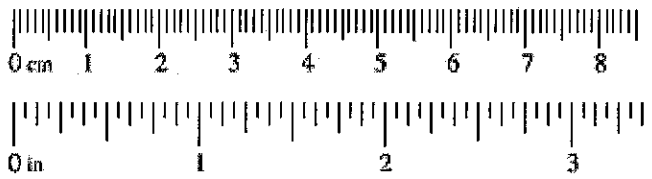


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

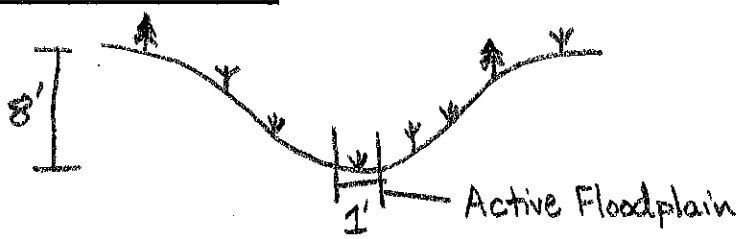
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S48 **Date:** May 15, 2012 **Time:** 1:27 pm

Cross section drawing:



Trough Shaped Drainage
sparsley vegetated 5% cover

LOW FLOW CHANNEL IS INDISTINCT

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators

NO DISTINCT CHANNEL CHARACTERISTICS

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble, course angular

Total veg cover: 5 % Tree: ____ % Shrub: ____ % Herb: 5 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No particle sorting, ravelled fine material in the bottom.
Headcuts in lower portion of upland drainage swale.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S49
Investigator(s): Jeff Boice, Collin Covington

Date: May 15, 2012 **Time:** 2:51 pm
Town: Alton **State:** Utah
Photo begin file#: 659 **Photo end file#:** 661

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 369622 mE 4143705 mN

Potential anthropogenic influences on the channel system:

None

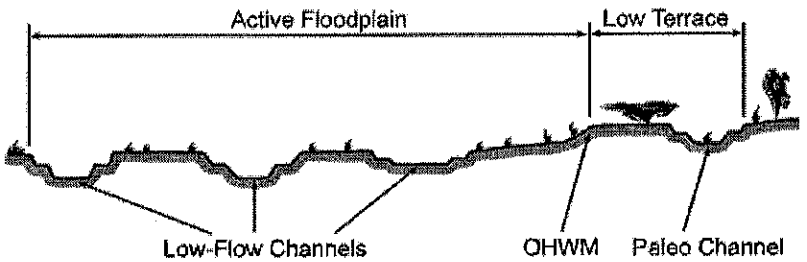
Brief site description:

Alfalfa and Bromus tectorum meadow on edge of irrigation pivot. No evidence of any drainage or channel.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

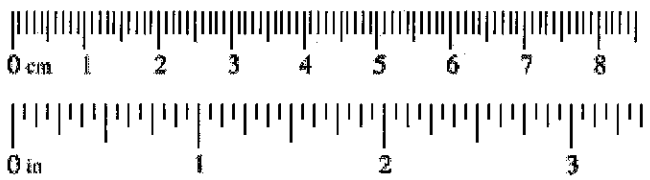


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S49 **Date:** May 15, 2012 **Time:** 2:51 pm

Cross section drawing:

No evidence of a drainage across the landscape.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit:

☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No Floodplain units.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S50
Investigator(s): Jeff Boice, Collin Covington

Date: May 15, 2012 **Time:** 3:14 pm
Town: Alton **State:** Utah
Photo begin file#: 669 **Photo end file#:** 671

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 369670 mE 4143290 mN

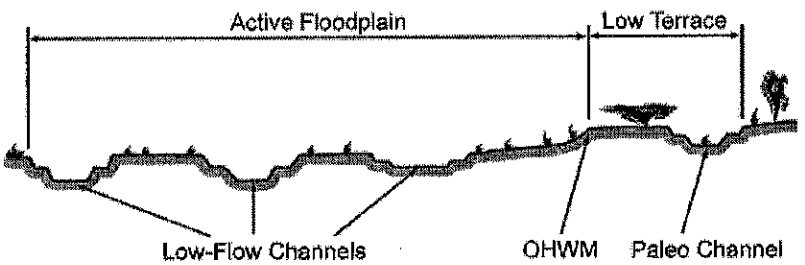
Potential anthropogenic influences on the channel system:
Agriculture production & pivot irrigation.

Brief site description: Upland meadow with major portions of the NHD being unidentifiable. No wetlands present. Vegetation in area: Smooth brome, Western wheatgrass, Cheatgrass, alfalfa, Wood's rose, & Juncus sp.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 20, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

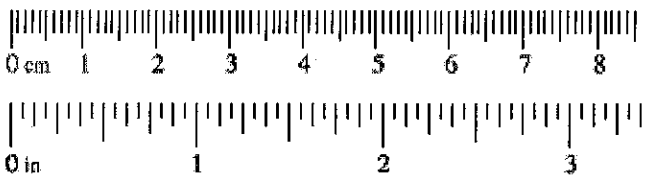


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

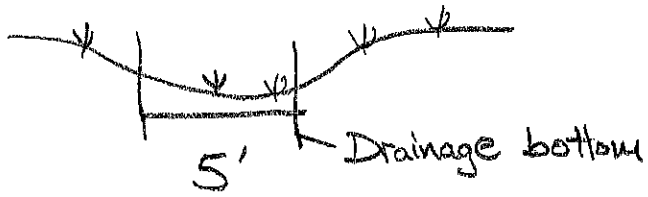
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	Sand
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	Silt
1/32 0.00061	0.0156	Medium silt	
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



Project ID: 421 **Cross section ID:** S50 **Date:** May 15, 2012 **Time:** 3:14 pm

Cross section drawing:



No channel or floodplain indicators.

Upland Drainage swale

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

No floodplain unit present

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: 5 % Tree: ____ % Shrub: ____ % Herb: 5 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No indicators or evidence of flooding or water.

Upland drainage swale.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S51
Investigator(s): Jeff Boice, Collin Covington

Date: May 15, 2012 **Time:** 4:30 pm
Town: Alton **State:** Utah
Photo begin file#: 685 **Photo end file#:** 687

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 369189 mE 4142791 m N

Potential anthropogenic influences on the channel system:

Pinyon/Juniper material from upland clearing in channel.

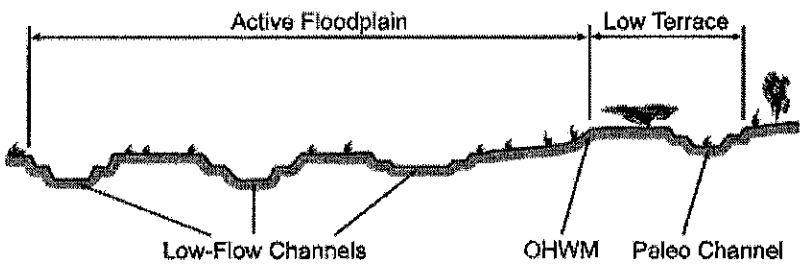
Brief site description:

Cleared upland terrace replanted with wheatgrass and alfalfa. Wetland vegetation in drainage bottom. Intermittent Stream Channel 3

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



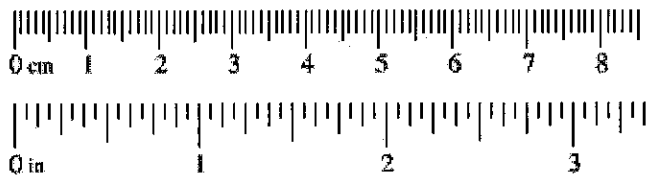
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☒ GPS
   - ☐ Other:

Intermittent Stream channel 3

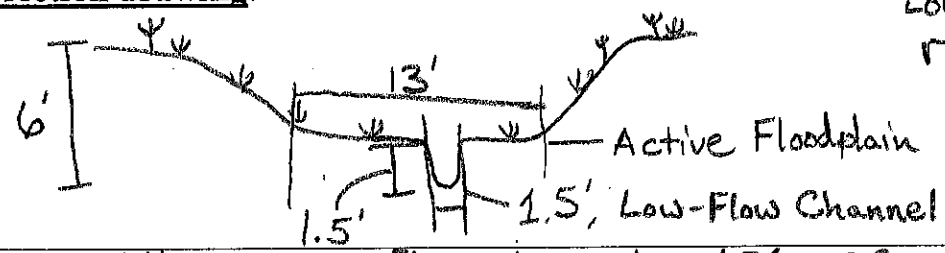
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S51 **Date:** May 15, 2012 **Time:** 4:30 pm

Cross section drawing:



Low width-to-depth ratio. Trough shaped channel with a notch for Low-Flow channel.

OHWM = Low-Flow channel = 1.5' WIDE

OHWM

ISC #3

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

None

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Vertical walls of an entrenched channel.

Project ID: 421 **Cross section ID:** S51 **Date:** May 15, 2012 **Time:** 4:30 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 100 % Tree: ____ % Shrub: ____ % Herb: 100 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Active floodplain vegetated with riparian wet meadow wetland
Channel is entrenched within the floodplain.

Intermittent Stream Channel 3

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S52
Investigator(s): Jeff Boice, Collin Covington

Date: May 16, 2012 **Time:** 9:30 am
Town: Alton **State:** Utah
Photo begin file#: 725 **Photo end file#:** 727

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 369146 mE 4143405 mN

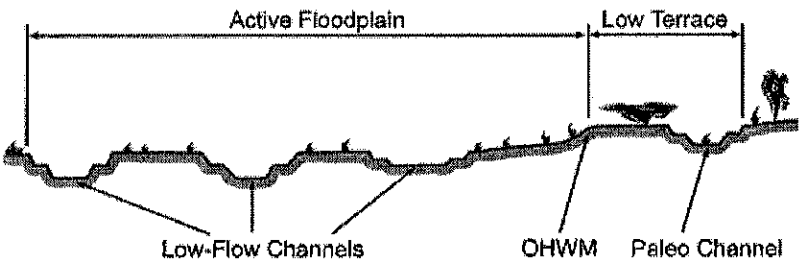
Potential anthropogenic influences on the channel system:
Runoff from excess irrigation on alfalfa field.

Brief site description:
Upland meadow high terrace with sagebrush and wheatgrass. Multiple upland drainage swales draining into NHD. Site is below confluence with another upland drainage swale.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

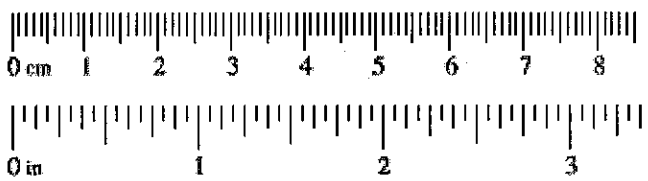


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

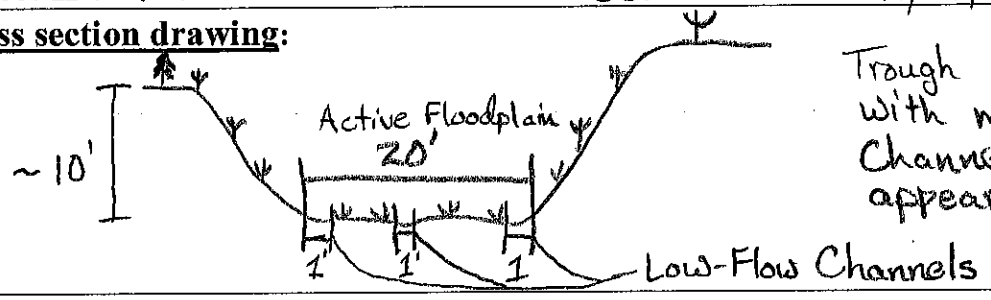
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
			Granule	
	0.079	2.00		
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S52 **Date:** May 16, 2012 **Time:** 9:30 am

Cross section drawing:



Trough shaped drainage with multiple Low-Flow Channels and the appearance of sheet flow.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators observed.

Low-flow channels have >10% vegetated cover dominated by upland plants.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: 10 % Tree: ____ % Shrub: ____ % Herb: 10 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Three separate LFC's that are vegetated. Area gets trampled by livestock.

Project ID: 421 **Cross section ID:** S52 **Date:** May 16, 2012 **Time:** 9:30am

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 25 % Tree: ____ % Shrub: ____ % Herb: 25 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Vegetated with cocklebur, wheatgrass, Hordeum jubatum, & alfalfa. Sheet flow across drainage bottom.

upland drainage swale.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S53
Investigator(s): Jeff Boice, Collin Covington

Date: May 16, 2012 **Time:** 11:13 am
Town: Alton **State:** Utah
Photo begin file#: 754 **Photo end file#:** 756

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD 83
Coordinates: 369002 mE 4142605 mN

Potential anthropogenic influences on the channel system:
Irrigation runoff & man-made pond w/ ~30' tall dam structure that influences flow.

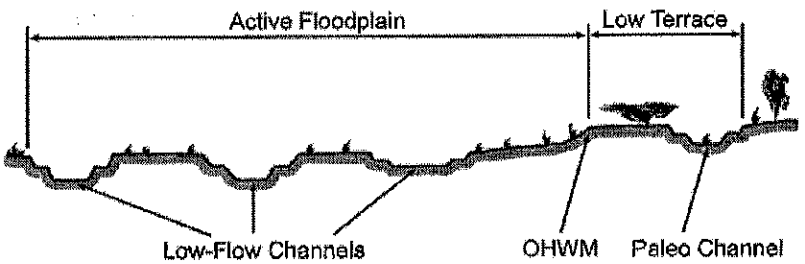
Brief site description:
Cleared high terrace with alfalfa and sagebrush with pockets of pinyon/juniper. Wetlands adjacent to channel. Top end of Intermittent Stream Channel 2

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies

- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

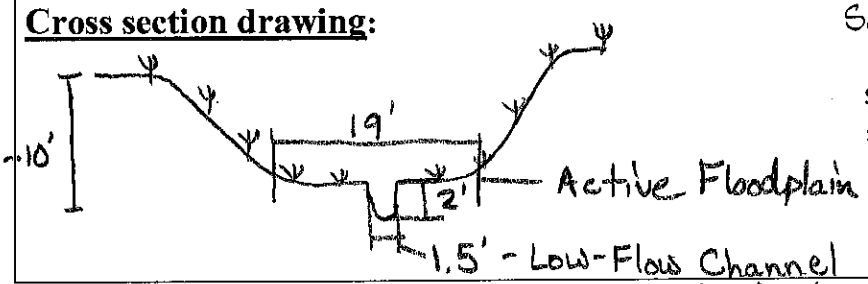
INTERMITTENT STREAM CHANNEL 2

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** 553 **Date:** May 16, 2012 **Time:** 11:13 am

Cross section drawing:



Saturated bottom. Trough-shaped channel with notch for LFC. Stable sideslopes. Low width-to-depth ratio.

Intermittent Stream Channel 2

OHWM = Low Flow Channel = 1.5' wide

OHWM

ISC#2

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☐ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

OHWM present.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: Ø% Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Saturated, evidence of recent past flow present
low flow channel is incised within vegetated active floodplain

Project ID: 421 **Cross section ID:** S53 **Date:** May 16, 2012 **Time:** 11:13 am

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 100 % Tree: ____ % Shrub: ____ % Herb: 100 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Strong hydrogen sulfide smell in bed of channel.
Active floodplain is vegetated with riparian wet meadow wetlands

Intermittent Stream Channel 2

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S54
Investigator(s): Jeff Boice, Collin Covington

Date: May 16, 2012 **Time:** 11:49 am
Town: Alton **State:** Utah
Photo begin file#: 769 **Photo end file#:** 771

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 368812 mE 4143110 mN

Potential anthropogenic influences on the channel system:
Seepage through dam structure & irrigation runoff.

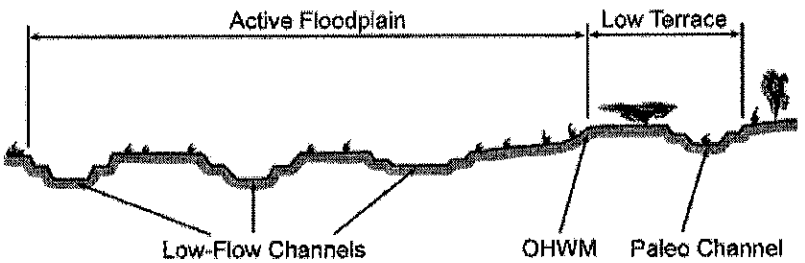
Brief site description:
Cleared high terrace vegetated with alfalfa & wheatgrass. Adjacent to pond below overflow input. Upland drainage swale

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies

- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

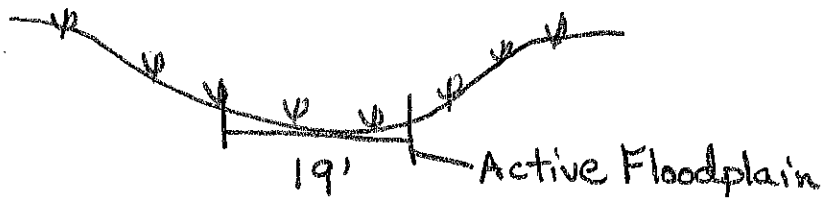
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud

Project ID: 421 **Cross section ID:** S54 **Date:** May 16, 2012 **Time:** 11:49 am

Cross section drawing:



Trough shaped, riparian meadow. No channel.

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators observed.

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: 95 % Tree: ____ % Shrub: ____ % Herb: 95 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Riparian wet meadow wetland. Strong hydrogen sulfide smell from soil. No channel. Vegetated wetland drainage

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S55
Investigator(s): Jeff Boice, Collin Covington

Date: May 16, 2012 **Time:** 12:32 pm
Town: Alton **State:** Utah
Photo begin file#: 789 **Photo end file#:** 791

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 368604 mE 4143329 m N

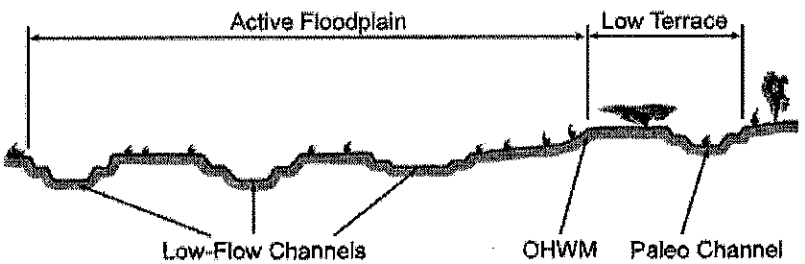
Potential anthropogenic influences on the channel system:
Irrigation runoff from alfalfa field

Brief site description:
Channel with flowing water present with adjcant wetlands & a high terrace of wheatgrass & alfalfa. Strong hydrogen sulfide smell Intermittent stream channel 4

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



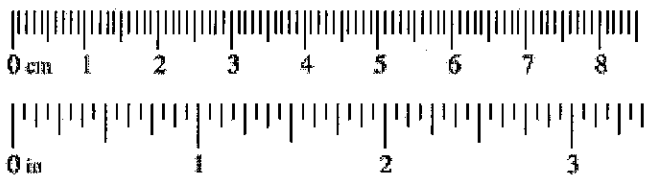
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Intermittent Stream channel 4

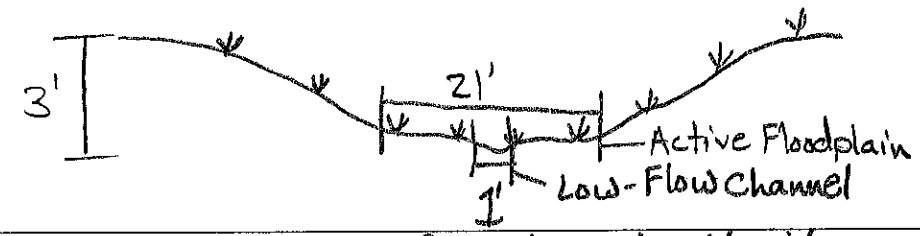
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S55 **Date:** May 16, 2012 **Time:** 12:32 pm

Cross section drawing:



Trough shaped channel with flowing water

OHWM = Low-flow channel = 1' wide

OHWM ISC #4

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments: OHWM present

— channel is incised within the active floodplain.
active floodplain is vegetated with riparian wet meadow wetland

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: Ø % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Flowing water in channel

Project ID: 421 **Cross section ID:** S55 **Date:** May 16, 2012 **Time:** 12:32 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 100 % Tree: ____ % Shrub: ____ % Herb: 100 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Strong hydrophytic soil development
riparian wet meadow wetland

Intermittent Stream Channel 4

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S56
Investigator(s): Jeff Boice, Collin Covington

Date: May 16, 2012 **Time:** 12:47 pm
Town: Alton **State:** Utah
Photo begin file#: 793 **Photo end file#:** 795

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 368562 mE 4143384 mN

Potential anthropogenic influences on the channel system:

Irrigation runoff.

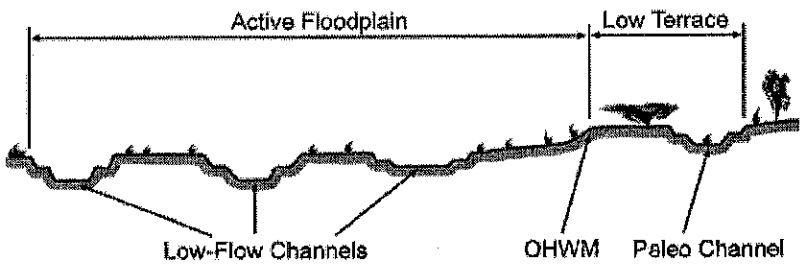
Brief site description:

Upland, rangeland high terrace with a broad, wet drainage swale. No evidence of an OHWM.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

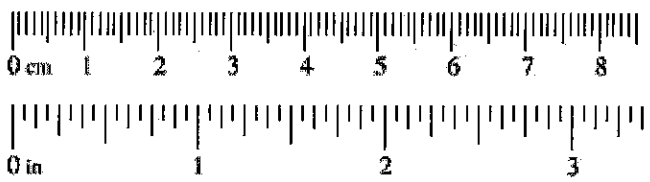


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

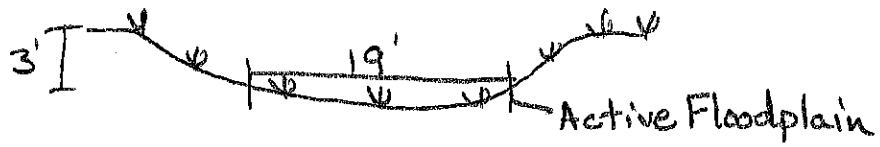
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S 56 **Date:** May 16, 2012 **Time:** 12:47 pm

Cross section drawing:



Trough shaped drainage
Bottom was saturated.

NO CHANNEL PRESENT 100% vegetated floodplain

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators.

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 100 % Tree: ____ % Shrub: ____ % Herb: 100 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Saturated soil under hydrophytic conditions.
No channel evident. Vegetated with Juncus sp. & Carex sp. riparian wet meadow wetland

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S57
Investigator(s): Jeff Boice, Collin Covington

Date: May 16, 2012 **Time:** 1:20 pm
Town: Alton **State:** Utah
Photo begin file#: 799 **Photo end file#:** 801

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 368570 mE 4143537 mN

Potential anthropogenic influences on the channel system:

Irrigation runoff.

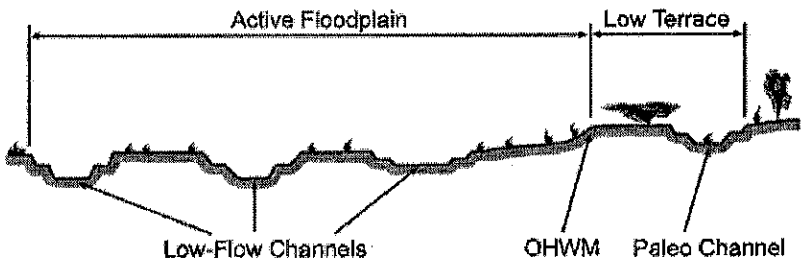
Brief site description:

Meadow high terrace with vegetated channel bottom. Flowing water present. Top part of Intermittent Stream Channel 4

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



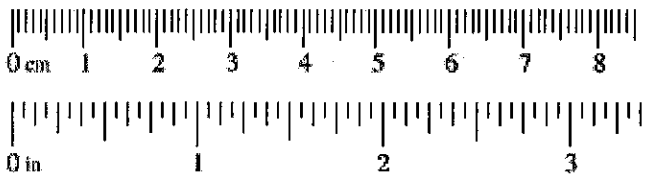
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Intermittent Stream Channel 4

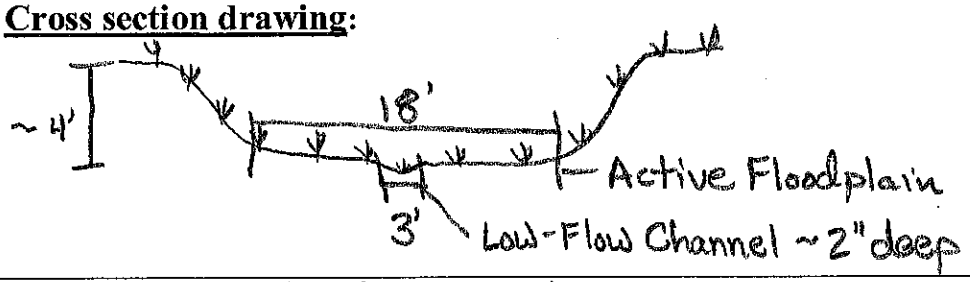
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S57 **Date:** May 16, 2012 **Time:** 1:20 pm

Cross section drawing:



Trough shaped channel. Densely vegetated. Flowing water.

OHWM = low flow channel = 3" WIDE

OHWM

ISC #4

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Flowing water present in channel.
Channel incised within active flood plain
Active flood plain vegetated with riparian wet meadow wetland.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: 20 % Tree: ____ % Shrub: ____ % Herb: 20 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☒ Other: Distinct banks
- ☐ Other: _____
- ☐ Other: _____

Comments:

Water present. Strong hydrogen sulfide smell.

Project ID: 421 **Cross section ID:** S57 **Date:** May 16, 2012 **Time:** 1:20 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 95 % Tree: ____ % Shrub: ____ % Herb: 95 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Histosol dominated by hydrogen sulfide. Vegetated with Juncus sp. & Carex sp.

Floodplain for Intermittent Stream Channel 4

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S58
Investigator(s): Jeff Boice, Collin Covington

Date: May 16, 2012 **Time:** 1:38 pm
Town: Alton **State:** Utah
Photo begin file#: 804 **Photo end file#:** 806

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 368640 mE 4143572 mN

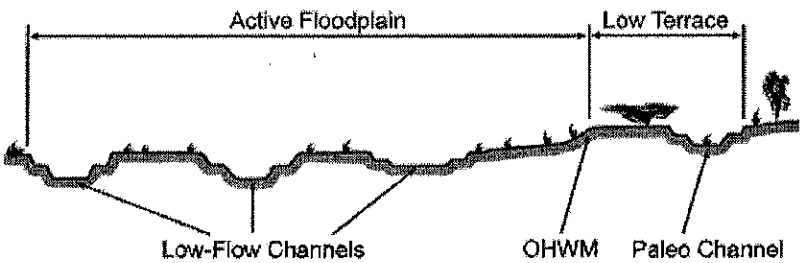
Potential anthropogenic influences on the channel system:
Irrigation runoff

Brief site description:
Sagebrush high terrace with a Juncus sp. dominated drainage swale.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

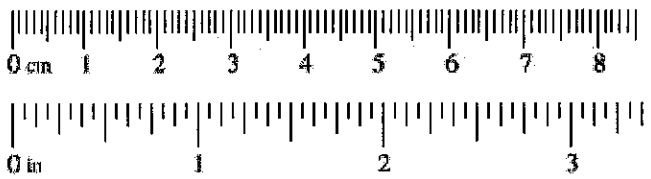


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

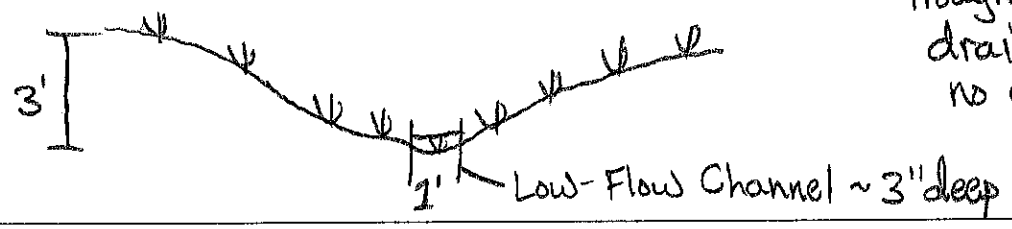
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S58 **Date:** May 16, 2012 **Time:** 1:38 pm

Cross section drawing:



Trough shaped drainage with no channel indicators

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators observed.
Vegetated drainage swale 50% plant cover present

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 50 % Tree: ____ % Shrub: ____ % Herb: 50 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No channel. Vegetated Drainage swale.
riparian wet meadow wetland

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S59
Investigator(s): Jeff Boice, Collin Covington

Date: May 16, 2012 **Time:** 1:50 pm
Town: Alton **State:** Utah
Photo begin file#: 809 **Photo end file#:** 811

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 368811 mE 4143576 mN

Potential anthropogenic influences on the channel system:

Irrigation runoff

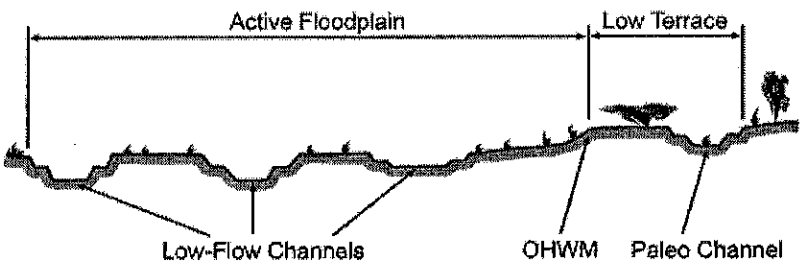
Brief site description:

Pinyon/Juniper and sagebrush upland high terrace.
Upland drainage swale

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

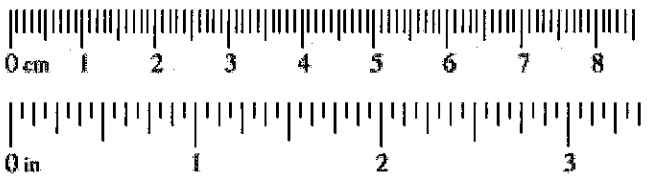


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

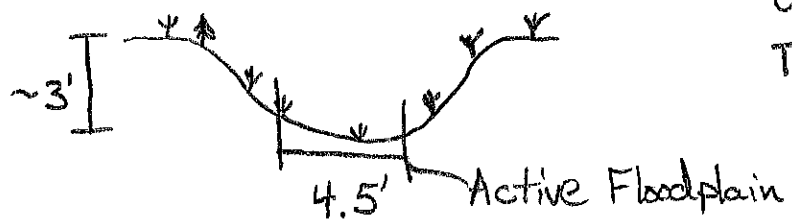
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S59 **Date:** May 16, 2012 **Time:** 1:50 pm

Cross section drawing:



U-shaped drainage. The active floodplain encompasses the Low-Flow Channel

Upland Drainage Swale

NO Low flow channel present

OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators
No channel present
vegetated drainage swale with 80% plant cover

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 80 % Tree: ____ % Shrub: ____ % Herb: 80 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No active flow evident. Upland drainage swale.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S60
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 21, 2012 **Time:** 3:32 pm
Town: Alton **State:** Utah
Photo begin file#: 820 **Photo end file#:** 822

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 370040 mE 4142332 mN

Potential anthropogenic influences on the channel system:

Road & culverts on the drainage upstream.

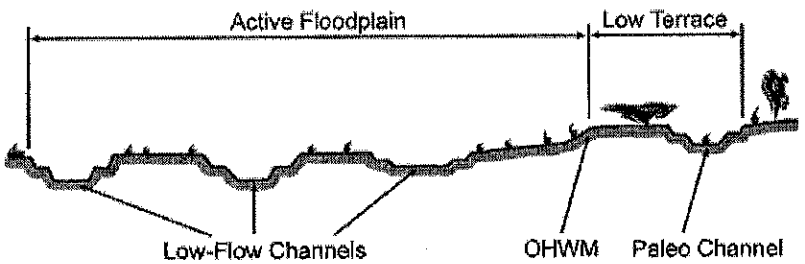
Brief site description:

Pinyon/Juniper & Sagebrush high terrace with an incised drainage with an active floodplain channel. Ephemeral Stream Channel 16

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



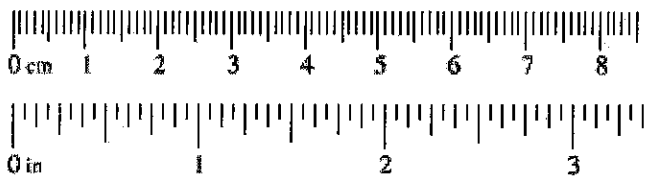
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [X] GPS
   - [ ] Other:

Ephemeral Stream Channel 16

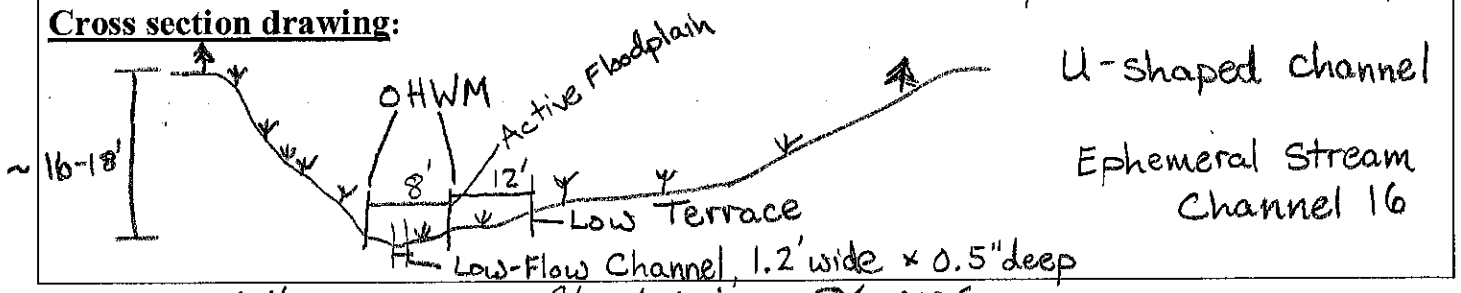
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S60 **Date:** May 21, 2012 **Time:** 3:32 pm

Cross section drawing:



OHWM = Active floodplain = 8' wide

OHWM

ESC #16

GPS point: See location on front

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Wracking debris. OHWM is not very distinct.

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: >2 % Tree: ____ % Shrub: ____ % Herb: >2 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [x] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Poorly defined banks ~ 0.5" deep

Project ID: 421 **Cross section ID:** S60 **Date:** May 21, 2012 **Time:** 3:32 pm

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble

Total veg cover: 5 % Tree: ____ % Shrub: ____ % Herb: 5 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Poorly defined bank

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble

Total veg cover: 30 % Tree: ____ % Shrub: 25 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☒ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Dry, Sagebrush dominated

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S61
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 21, 2012 **Time:** 3:46 pm
Town: Alton **State:** Utah
Photo begin file#: 824 **Photo end file#:** 826

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Northern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 369994 mE 4142386 mN

Potential anthropogenic influences on the channel system:

County road & drainage culvert

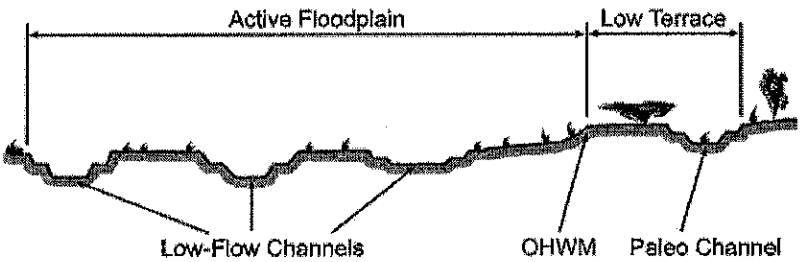
Brief site description:

Pinyon/Juniper & sagebrush upland high terrace. Point is below confluence of two upland drainage swale's.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: June 22, 2011
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

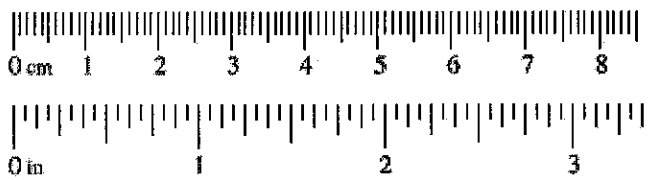


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

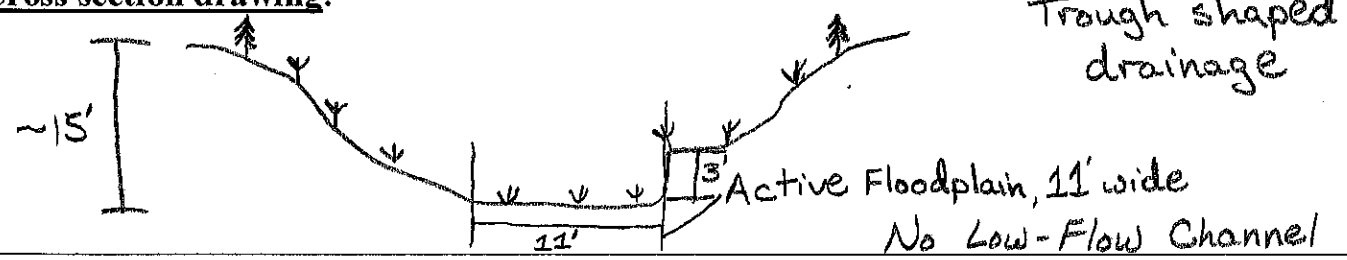
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S61 **Date:** May 21, 2012 **Time:** 3:46 pm

Cross section drawing:



OHWM

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

No OHWM indicators

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 100 % Tree: ____ % Shrub: ____ % Herb: 100 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No channel characteristics or OHWM indicators.

Vegetation dominated by Bromus inermis.

Project ID: **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Alton Coal
Project Number: 421
Stream: S62
Investigator(s): Jeff Boice, Dennis Wenger, Collin Covington

Date: May 21, 2012 **Time:** 4:10 pm
Town: Alton **State:** Utah
Photo begin file#: 829 **Photo end file#:** 831

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Eastern portion of project area.

Projection: UTM **Datum:** NAD83
Coordinates: 370913 mE 4141797 m N

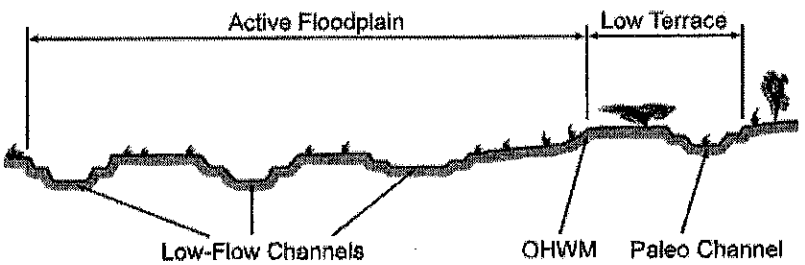
Potential anthropogenic influences on the channel system:
Cleared Pinyon/Juniper from high terrace placed in channel.

Brief site description:
Sagebrush & Bromus inermis on the high terrace that has been cleared of Pinyon/Juniper. Ephemeral Stream Channel 10

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: June 22, 2011
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☐ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



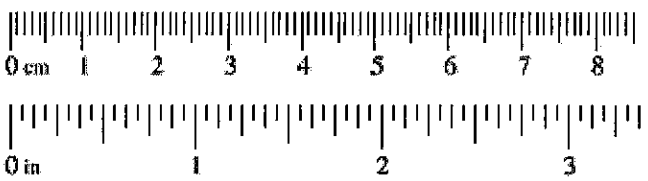
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☒ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

Ephemeral Stream Channel 10

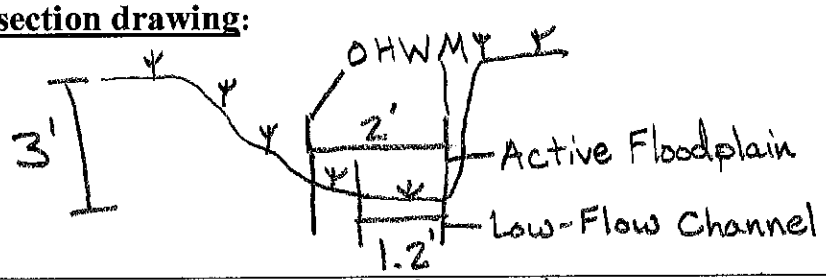
Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	Gravel
	2.56	64	Cobble	
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	Sand
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	Silt
1/32	0.00061	0.0156	Medium silt	
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 421 **Cross section ID:** S62 **Date:** May 21, 2012 **Time:** 4:10 pm

Cross section drawing:



U-shaped Channel

Ephemeral Stream Channel 10

OHWM = Active floodplain = 2' WIDE

OHWM

ESC #10

GPS point: See location on front

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

OHWM is not very distinct

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Silt

Total veg cover: >2 % Tree: ____ % Shrub: ____ % Herb: >2 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

—

Project ID: 421 **Cross section ID:** S62 **Date:** May 21, 2012 **Time:** 4:10 pm

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: silt

Total veg cover: 10 % Tree: ____ % Shrub: ____ % Herb: 10 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☒ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☒ Soil development
- ☒ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Vegetated demarcation between the Active Floodplain & Low-Flow Channel.

Ephemeral Stream Channel 10

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

APPENDIX E

Representative Photos of Wetland and Stream Channel Conditions

Photo Point Locations shown in Universal Transverse Mercator (UTM) Coordinates

Photo Point	Note	Easting	Northing
1	Wetland A	371074	4137483
2	Wetland B	371099	4137569
3	Wetland C	371236	4137633
4	Wetland D	371044	4137897
5	Wetland E	371498	4138374
6	Wetland F	369383	4138492
7	Wetland G	370581	4140647
8	Wetland H	368875	4140999
9	Wetland I	369191	4140085
10	Wetland X	369542	4140469
11	Wetland K	369864	4141735
12	Wetland K	369732	4141406
13	Wetland L	369493	4141303
14	Wetland M	369966	4142136
15	Wetland N	369108	4142471
16	Wetland O	369203	4143102
17	Wetland W	369031	4143843
18	Wetland W	369195	4143663
19	Wetland Q	368649	4143270
20	Wetland R	368511	4143303
21	Wetland S	368569	4143476
22	Wetland T	368568	4143381
23	Wetland U	368637	4143487
24	Wetland V	368653	4143742
25	Wetland J	368643	4143660
26	Wetland P	369664	4143269
27	Ephemeral Stream Channel 1	370460	4137225
28	Ephemeral Stream Channel 2	370317	4137440
29	Ephemeral Stream Channel 3	370638	4137437
30	Ephemeral Stream Channel 4	369287	4139173
31	Ephemeral Stream Channel 5	369772	4139778
32	Ephemeral Stream Channel 6	369926	4140069
33	Ephemeral Stream Channel 7	370412	4140281
34	Ephemeral Stream Channel 8	370533	4140341
35	Ephemeral Stream Channel 9	368914	4140235
36	Ephemeral Stream Channel 10	371238	4141806
37	Ephemeral Stream Channel 11	370273	4141857
38	Ephemeral Stream Channel 11	371562	4142562
39	Ephemeral Stream Channel 12	369847	4141171
40	Ephemeral Stream Channel 13	369364	4141901
41	Ephemeral Stream Channel 14	369245	4138500
42	Ephemeral Stream Channel 15	368945	4140156
43	Ephemeral Stream Channel 16	370039	4142325
44	Intermittent Stream Channel 1	369811	4139852
45	Intermittent Stream Channel 1	371797	4140695
46	Intermittent Stream Channel 2	369481	4141287
47	Intermittent Stream Channel 2	369004	4142597
48	Intermittent Stream Channel 3	369187	4142794
49	Intermittent Stream Channel 4	368602	4143324

Photo Point Locations shown in Universal Transverse Mercator (UTM) Coordinates

Photo Point	Note	Easting	Northing
50	Perennial Stream Channel 1	369802	4141511
51	Perennial Stream Channel 1	370127	4142329
52	Perennial Stream Channel 1	369582	4140769
53	Irrigation Ditch Diversion Point	369572	4141130
54	Surveying	368890	4140668
55	Irrigation Reservoir	368693	4143081
56	Stream Sample Point 2	371013	4137287
57	Stream Sample Point 16	369785	4139186
58	Stream Sample Point 38	371471	4142390
59	Stream Sample Point 47	370148	4142219
60	Stream Sample Point 49	369621	4143700
61	Stream Sample Point 54	368815	4143115
62	Sagebrush Habitat	370211	4138384
63	Overlook, east side of project area	369736	4138854
64	Valley Floor	370308	4140333
65	Overlook, southwest side of project area	371656	4142184
66	Northwest Meadow	368486	4143826
67	Overlooking north side wetlands	369490	4143663
68	Wetland Sample Point 01	370022	4142430
69	Wetland Sample Point 07	370115	4138243
70	Wetland Sample Point 09	369566	4139259
71	Wetland Sample Point 52	369654	4143582

**Photo point locations are shown as UTM Coordinates using a NAD83 Projection*

Photo 1. Looking southeast at Wetland A. Photo taken on May 22, 2012.

Photo 2. Looking northwest at Wetland B. Photo taken on May 22, 2012.

Photo 3. Looking south at Wetland C. Photo taken on May 22, 2012.

Photo 4. Looking southwest at Wetland D. Photo taken on May 22, 2012.

Photo 5. Looking southeast at Wetland E. Photo taken on May 22, 2012.

Photo 6. Looking southeast at Wetland F. Photo taken on May 22, 2012.

Photo 7. Looking southwest at Wetland G. Photo taken on May 22, 2012.

Photo 8. Looking southwest at Wetland H. Photo taken on May 23, 2012.

Photo 9. Looking northeast at Wetland I. Photo taken on May 23, 2012.

Photo 10. Panoramic photo looking north to east at Wetland X. Photo taken on May 23, 2012.

Photo 11. Looking northeast at Wetland K. Photo taken on May 24, 2012.

Photo 12. Looking northeast at Wetland K. Photo taken on May 24, 2012.

Photo 13. Looking north at Wetland L. Photo taken on May 23, 2012.

Photo 14. Panoramic photo looking north to east at Wetland M. Photo taken on May 24, 2012.

Photo 15. Looking north at Wetland N. Photo taken on June 6, 2012.

Photo 16. Looking north at Wetland O. Photo taken on June 7, 2012.

Photo 17. Looking east at Wetland W. Photo taken on June 7, 2012.

Photo 18. Looking south at Wetland W. Photo taken on June 7, 2012.

Photo 19. Looking south at Wetland Q. Photo taken on June 7, 2012.

Photo 20. Looking southeast at Wetland R. Photo taken on June 7, 2012.

Photo 21. Looking north at Wetland S. Photo taken on June 7, 2012.

Photo 22. Looking northwest at Wetland T. Photo taken on June 7, 2012.

Photo 23. Looking southwest at Wetland U. Photo taken on June 6, 2012.

Photo 24. Looking northeast at Wetland V. Photo taken on June 6, 2012.

Photo 25. Looking south at Wetland J. Photo taken on June 6, 2012.

Photo 26. Looking east at Wetland P. Photo taken on June 4, 2012.

Photo 27. Looking east at Ephemeral Stream Channel 1. Photo taken on May 4, 2012.

Photo 28. Looking northeast at Ephemeral Stream Channel 2. Photo taken on May 4, 2012.

Photo 29. Looking north at Ephemeral Stream Channel 3. Photo taken on May 4, 2012.

Photo 30. Looking south at Ephemeral Stream Channel 4. Photo taken on May 5, 2012.

Photo 31. Looking southeast at Ephemeral Stream Channel 5. Photo taken on May 5, 2012.

Photo 32. Looking southwest at Ephemeral Stream Channel 6. Photo taken on May 6, 2012.

Photo 33. Looking south at Ephemeral Stream Channel 7. Photo taken on May 6, 2012.

Photo 34. Looking west at Ephemeral Stream Channel 8. Photo taken on May 6, 2012.

Photo 35. Looking west at Ephemeral Stream Channel 9. Photo taken on May 6, 2012.

Photo 36. Looking northeast at Ephemeral Stream Channel 10. Photo taken on May 7, 2012.

Photo 37. Looking east at Ephemeral Stream Channel 11. Photo taken on May 7, 2012.

Photo 38. Looking east at Ephemeral Stream Channel 11. Photo taken on May 8, 2012.

Photo 39. Looking northeast at Ephemeral Stream Channel 12. Photo taken on May 14, 2012.

Photo 40. Looking northeast at Ephemeral Stream Channel 13. Photo taken on May 15, 2012.

Photo 41. Looking east at Ephemeral Stream Channel 14. Photo taken on May 5, 2012.

Photo 42. Looking north at Ephemeral Stream Channel 15. Photo taken on May 6, 2012.

Photo 43. Looking north at Ephemeral Stream Channel 16. Photo taken on May 21, 2012.

Photo 44. Looking west at Intermittent Stream Channel 1. Photo taken on May 5, 2012.

Photo 45. Looking east at Intermittent Stream Channel 1. Photo taken on May 7, 2012.

Photo 46. Looking north at Intermittent Stream Channel 2. Photo taken on May 14, 2012.

Photo 47. Looking northwest at Intermittent Stream Channel 2. Photo taken on May 16, 2012.

Photo 48. Looking south at Intermittent Stream Channel 3. Photo taken on May 15, 2012.

Photo 49. Looking north at Intermittent Stream Channel 4. Photo taken on May 16, 2012.

Photo 50. Looking north at Perennial Stream Channel 1 (Kanab Creek). Photo taken on May 4, 2012.

Photo 51. Looking north at Perennial Stream Channel 1. Photo taken on May 24, 2012.

Photo 52. Looking southwest at Perennial Stream Channel 1. Photo taken on May 4, 2012.

Photo 53. Looking east at irrigation ditch diversion point. Photo taken on May 14, 2012.

Photo 54. Looking south at surveying of Stream Sample Point 28. Photo taken on May 6, 2012.

Photo 55. Panoramic photo looking northwest to northeast at the irrigation reservoir. Photo taken on May 16, 2012.

Photo 56. Looking north at Stream Sample Point 2.
Photo taken on May 3, 2012. No OHWM present.

Photo 57. Looking north at Stream Sample Point 16.
Photo taken on May 5, 2012. No OHWM present.

Photo 58. Looking southeast at Stream Sample Point 38.
Photo taken on May 8, 2012. No OHWM present.

Photo 59. Looking west at Stream Sample Point 47.
Photo taken on May 15, 2012. No OHWM present.

Photo 60. Looking north at Stream Sample Point 49.
Photo taken on May 15, 2012. No OHWM present.

Photo 61. Looking southwest at Stream Sample Point 54.
Photo taken on May 16, 2012. No OHWM present.

Photo 62. Looking east at a sagebrush opening. Photo taken on May 4, 2012.

Photo 63. Looking southwest at the southwest corner of the project area. Photo taken on May 5, 2012.

Photo 64. Looking south at a valley floor. Existing coal mine visible in background. Photo taken on May 6, 2012.

Photo 65. Looking southwest at the east-central portion of the project area. Photo taken on May 8, 2012.

Photo 66. Looking east at the northwest portion of the project area. Photo taken on June 6, 2012.

Photo 67. Looking west at northern portion of the project area. Photo taken on June 6, 2012.

Photo 68. Looking northwest at Wetland Sample Point 01. Photo taken on May 21, 2012. Did not meet wetland criteria.

Photo 69. Looking west at Wetland Sample Point 07. Photo taken on May 22, 2012. Did not meet wetland criteria.

Photo 70. Looking southeast at Wetland Sample Point 09. Photo taken on May 22, 2012. Did not meet wetland criteria.

Photo 71. Looking north at Wetland Sample Point 52. Photo taken on June 6, 2012. Did not meet wetland criteria.

I.4. Alton Coal Tract Special Status Plant Species Clearance Survey Report

ALTON COAL TRACT SPECIAL STATUS PLANT SPECIES CLEARANCE SURVEY REPORT

INTRODUCTION

The Alton Coal Tract is in Kane County, Utah, approximately 0.10 mile south of the town of Alton and 2.9 miles east of U.S. Route 89 (US-89). The tract occurs at approximately 6,900 feet above sea level in the semiarid foothills of the Colorado Plateau Semidesert Province (Woods et al. 2001) of south-central Utah. Vegetation in the tract is predominantly pinyon-juniper woodlands (40.2%), with large areas of sagebrush/grassland (24.1%) and sagebrush/grassland (treated) (20.9%), and more limited distribution of annual and perennial grasses (9.1%), mountain brush (1.8%), meadow (1.8%), riparian (1.5%), and rabbitbrush (0.3%) vegetation communities (detailed discussion of each vegetation community is presented in Section 3.15.2 of the SDEIS). These vegetation communities are typical of the surrounding Colorado Plateau vegetation. Numerous plant species have limited distributions in Kane County and nearby counties because of the area's unique geologic or soil conditions, or because of other habitat conditions that have contributed to rarity or restricted ranges.

Five federally listed plant species and 16 BLM-listed sensitive plant species are known to occur in Kane County, Utah. Of these, only a few are known to occur at the elevational range in the tract, and potential habitats are limited. Surveys for suitable habitat for special status plant species were conducted in November 2007, August 2008, and September 2008, and no potential habitats were identified. Because the conservation status and known distributions of both federally listed and BLM-listed plant species have changed since the 2008 surveys, additional potential habitat surveys were required to determine if currently listed special status species or their habitats occur in the tract. This report presents the current knowledge of special status plant species with potential to occur in Kane County, Utah, and the results of the June 2012 field surveys to validate the potential for special status plant species distributions in the tract.

METHODS

Federally Listed Plant Species

In their comments on the DEIS, the U.S. Fish and Wildlife Service indicated four federally listed species that are known to occur in Kane County, Utah: Welsh's milkweed (*Asclepias welshii*), Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*), Kodachrome bladderpod (*Lesquerella tumulosa*), and Siler pincushion cactus (*Pediocactus sileri*). In addition, Jones cycladenia (*Cycladenia humilis* var. *jonesii*) was added because it is listed in the USFWS *Federally Listed and Proposed Endangered, Threatened and Candidate Species and Critical Habitat in Utah – Species List by County* (USFWS 2012).

Consultation and Coordination with USFWS following Comments on the DEIS

SWCA consulted with biologists at the USFWS and BLM to determine the potential for the federally listed plant species listed for Kane County, Utah, (Table 1) to occur in the tract. Potential habitat distributions for these federally listed plant species was determined using geographic information systems (GIS) analysis of Southwest Regional Gap Analysis Project (SWReGAP) land cover types, vegetation communities delineated during 2007 field reconnaissance, elevational range, and surface geology. SWCA

identified Welsh's milkvetch as having limited potential to occur in the tract, but further review of the species' current distributions and habitat associations indicates that it is unlikely to be distributed in the tract (personal communication, Gubler 2012). Table 1 summarizes the distributions and habitat associations of the federally listed plant species known to occur in Kane County, Utah, and the rationale for eliminating these species from further analysis.

Table 1. Federally Listed Plant Species Potential to Occur in the Alton Coal Tract

Species Name/ Common Name	Status*	Location/Habitat (county—location; geologic stratum; plant community; elevation range)	Potential for Occurrence in the Alton Tract†
		No Potential in Tract	
Asclepias welshii Welsh's milkweed	T	Garfield, Kane—sand dunes; sagebrush, juniper, and ponderosa pine communities; 5,600–6,200 feet above mean sea level (amsl). June–early September. (UNPS 2003–2013).	None. Igneous gravel substrates and species' elevational range do not occur in the tract (personal communication, Defreese 2012a).
Cycladenia humilis var. *jonesii* Jones cycladenia	T	Garfield, Kane—gypsiferous soils of the Chinle, Cutler, and Summerville formations; desert shrub and juniper communities; 4,400–6,000 feet amsl. Mid-May–June. (UNPS 2003–2013).	None. Potential habitats and the species' elevational range do not occur in the tract (personal communication, Defreese 2012b).
Eriogonum corymbosum var. *nilesii* Las Vegas buckwheat	C	Kane—Paria River; Moenkopi formation, sandstone talus slopes, gypsiferous soils, burned or eroding basalt slopes; sparse vegetation; 650–2,800 feet amsl. Late September–early October. (Tilley 2012).	None. Potential habitat for the species does not occur in the tract (personal communication, Defreese 2012c).
Lesquerella tumulosa Kodachrome bladderpod	E	Kane—known only from the Kodachrome Flats area of the Paria River on white shale knolls; Utah juniper communities; 5,700 feet amsl. May–June. (Tilley et al. 2010).	None. Highly restricted local endemic. The species' potential habitats and elevational range do not occur in the tract (Tilley et al. 2010).
Pediocactus sileri Siler pincushion cactus	T	Kane—gypsiferous clay and sandy soils derived from the Moenkopi Formation; desert shrub communities; 2,800–5,400 feet amsl. April–June. (USFWS 2008)	None. The species' potential habitats and elevational range do not occur in the tract (USFWS 2008).

* Status: C = federal candidate; E = federally endangered; T = federally threatened.

† Occurrence: None = suitable and/or potential habitat for this species are unknown in survey area; Low = some suitable and/or potential habitat for this species, but populations unknown near survey area; Moderate = substantial suitable and/or potential habitat for this species, or know populations near, but unknown in survey area; High = populations known in survey area or immediate proximity.

BLM Sensitive Plant Species

The *INTERIM Bureau of Land Management Sensitive Plant Species List for Utah February 2011* provides guidance for the management of sensitive plant species occurring on BLM lands in Utah and is maintained by the BLM's Utah State Office (BLM 2011). In accordance with Utah BLM Instruction Memorandum (IM) No. 2011-037, the updated sensitive plant species list became effective for BLM lands in Utah April 18, 2011. The *INTERIM Bureau of Land Management Sensitive Plant Species List for Utah February 2011* replaces the 2002 list. The 2011 list contains 16 sensitive plant species that are known to occur or have potential to occur in Kane County, Utah.

SWCA identified three BLM sensitive species as having limited potential to occur in the tract: Cronquist's phacelia (*Phacelia cronquistiana*), pinnate spring-parsley (*Cymopterus beckii*), and escarpment milkvetch (*Astragalus striatiflorus*). Review of the current distributions and habitat associations for these species indicated that only *Phacelia cronquistiana* had potential to occur on the

tract. Before conducting clearance surveys, SWCA botanists met with BLM ecologist Kim Anderson, who recommended that surveys be conducted for *Phacelia cronquistiana*.

Table 2 summarizes all Utah BLM sensitive plant species known to occur in Kane County, their distributions and habitat associations, and the rationale for either retaining or eliminating each species from further analysis.

Table 2. Utah BLM Sensitive Plant Species Potential to Occur in the Alton Coal Tract

Species Name/ Common Name	Status*	Location/Habitat (county—location; geologic stratum; plant community; elevation range)	Potential for Occurrence in the Alton Tract†
		Moderate Potential	
Phacelia cronquistiana Cronquist's phacelia	S	Kane—clay outcrops; pinyon-juniper, sagebrush, and ponderosa pine communities; (5,700) 6,000–6,900 feet amsl. May–June. (UNPS 2003–2013)	Moderate. Potential habitats occur in the tract (personal communication, Gubler 2012). Surveyed in June 2012. No individuals were found during surveys of the tract and reference sites.
		Low Potential	
Cymopterus beckii Pinnate spring-parsley	S	Kane (?)—sandy or stony soils, rock crevices and cliffs; pinyon-juniper, mountain brush, ponderosa/manzanita, conifer/oak and Douglas fir communities; 5,600–7,500 feet amsl. April–July (UNPS 2003–2013)	Low. Species is not known to occur in Kane County. Limited or no potential habitats in the tract (personal communication, Gubler 2012). No surveys performed.
Astragalus welshii Welsh's milkvetch	S	Garfield, Kane—igneous gravels; sagebrush, pinyon-juniper, and sagebrush-aspen communities; 7,000–9,200 feet amsl. May–early June. (UNPS 2003–2013)	Low. Potential habitats on igneous gravels do not occur in the tract (personal communication, Gubler 2012). No surveys performed.
Astragalus striatiflorus Escarpment milkvetch	S	Kane, Washington—Navajo Sandstone; sandy channels in ponderosa pine, sandy desert shrub, and pinyon-juniper; 4,900–6,600 feet amsl. May–June. (UNPS 2003–2013)	Low. Potential habitats and distribution may occur, but the species is not predicted to occur in the tract based on GIS-based predictive models (Krause 2012). No surveys performed.
		No Potential in the Tract	
Astragalus ampullarius Gumbo milkvetch	S	Kane, Washington—clay soils of the Chinle and Tropic (?) shale formations; mixed desert shrub and juniper communities; 3,200-5,400 feet amsl. April–May. (UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.
Dalea flavescens var. *epica* Hole-in-the-rock prairie clover	S	Garfield, Kane—sandstone bedrock and sandy soils; blackbrush and mixed desert shrub communities; 4,700–5,000 feet amsl. (No flowering dates published). (UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.
Euphorbia nephradenia Utah spurge	S	Garfield, Kane—dark clay hills, blown sand, and stabilized dunes derived from Tropic shale and Entrada formations; mat saltbush, blackbrush, *Ephedra*, mixed salt desert scrub, and grassland communities; 3,800–4,800 feet amsl. June–August. (UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.
Haplopappus zionis Cedar Breaks goldenbush	S	Garfield, Kane—Cedar Breaks (Claron limestone) formation; spruce-fir and ponderosa pine communities; 8,000–10,000 feet amsl. Mid-July–August. (UNPS 2003–2013)	None. Elevational range of the species is above the elevations present in the tract.

Table 2. Utah BLM Sensitive Plant Species Potential to Occur in the Alton Coal Tract

Species Name/ Common Name	Status*	Location/Habitat (county—location; geologic stratum; plant community; elevation range)	Potential for Occurrence in the Alton Tract†
Jamesia americana var. *zionis* Zion jamesia	S	Kane— hanging gardens, sandstone crevices, cliff sides and bases; pinyon-juniper, oak, and ponderosa pine communities; 3,900–6,600 (8,200) feet amsl. (No flowering dates published). (UNPS 2003–2013)	None. Potential habitats are not present in tract.
Lupinus caudatus var. *cutleri* Cutler lupine	S	Kane—pinyon-juniper woodland communities; 5,150 feet amsl. Mid-April–May. (UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.
Oenothera murdockii Chinle evening primrose	S	Kane—red-purple or grey clay silty barrens of the Chinle and Moenkopi(?) formations; pinyon-juniper communities; 4,400–5,600 feet amsl. April–May. (UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.
Pediomelum epipsilum Kane breadroot	S	Kane—Chinle and Moenkopi formations; pinyon-juniper woodland and desert shrub communities; 4,000–5,500 feet amsl. May–June. (UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.
Phacelia pulchella var. *atwoodii* Atwood's pretty phacelia	S	Kane—Moenkopi and Carmel derived soils; pinyon-juniper, oak, sagebrush, ash, and serviceberry communities; 5,100–5,500 feet amsl. April–May. (UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.
Salvia columbariae var. *argillacea* Chinle chia	S	Kane—saline clay silts and "gypsum boils" of the Chinle formation on alluvium or colluvium; sparse pinyon-juniper communities; 4,250–5,600 feet amsl. Mid-May–mid-June. (UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.
Sphaeralcea grossulariifolia var. *fumariensis* Smoky Mountain mallow	S	Kane—Straight Cliffs, Tropic Shale, and Dakota formations on and near Smoky Mountain; matchweed, *Ephedra*, galleta, shadscale, and juniper communities; 4,400–5,400 feet amsl. April–June. (UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.
Thelypodiopsis ambigua var. *erecta* Kanab thelepody	S	Kane—clay soils derived from purple Chinle shales; Pinyon-juniper and desert shrub communities; 5,000–5,400 feet amsl. April–May. (UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.
Trifolium variegatum var. *parunuweapensis* Variegated clover	S	Kane—sand seeps; pinyon-juniper and ponderosa pine communities; 4,200–5,905 feet amsl. (No flowering dates published). (UNPS 2009; UNPS 2003–2013)	None. Elevational range of the species is below the elevations present in the tract.

* Status: C = federal candidate; E = federally endangered; T = federally threatened.

† Occurrence: None = suitable and/or potential habitat for this species are unknown in survey area; Low = some suitable and/or potential habitat for this species, but populations unknown near survey area; Moderate = substantial suitable and/or potential habitat for this species, or know populations near, but unknown in survey area; High = populations known in survey area or immediate proximity.

Clearance Survey Results

Presence/absence surveys for *Phacelia cronquistiana* were conducted by SWCA botanists on June 25 and 26, 2012. Clearance surveys followed the protocols established in the *U.S. Fish and Wildlife Service Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed and Candidate Plants* (USFWS 2011). Under these guidelines, SWCA conducted clearance surveys for plants within suitable habitats (pinyon-juniper and sagebrush communities) on the

Alton Coal Tract. Clearance surveys included the tract and all potential habitats within a 300-foot buffer of the tract boundary.

No individuals of *Phacelia cronquistiana* were found in the tract or at two reference populations visited before the site surveys. The species absence at the reference populations may have been due to the very hot and dry early growing season of 2012, which may have limited or prevented the germination and/or growth of this annual flowering plant.

SUMMARY

Of the five federally listed and 16 BLM sensitive plant species known to occur in Kane County, Utah, one species, *Phacelia cronquistiana* (BLM sensitive), was identified as warranting surveys of potential habitats in the Alton Coal Tract. Surveys for *Phacelia cronquistiana* in pinyon-juniper and sagebrush vegetation communities were conducted on June 26 and 27, 2012. No individuals were found either on the tract or during site visits to reference sites. The absence of the annual forb from the reference sites may have been due to the very hot and dry conditions during the early 2012 growing season.

LITERATURE CITED

BLM. 2011. *INTERIM BLM Sensitive Plant Species List for Utah February 2011*. Available at: http://www.unps.org/miscpdf/blmspslFeb2011.pdf. Accessed on July 18, 2013.

Defreese, A. 2012a. Personal communication between Audrey McCulley, SWCA, and Amy Defreese, USFWS, May 17, 2012, re: federally listed plant species potential to occur in the Alton Coal Tract.

———. 2012b. Personal communication between Audrey McCulley, SWCA, and Amy Defreese, USFWS, June 14, 2012, re: federally listed plant species potential to occur in the Alton Coal Tract.

———. 2012c. Personal communication between Audrey McCulley, SWCA, and Amy Defreese, USFWS, October 2, 2012, re: federally listed plant species potential to occur in the Alton Coal Tract.

Gubler, C. 2012. Personal communication between Carson Gubler, BLM, and Dustin Rooks, BLM, June 14, 2012, re: Welsh's milkvetch distribution.

Krause, C.M. 2012. Spatial patterns of endemic plant species of the Colorado Plateau. Calochortiana 1:63–76.

Tilley, D., L. St. John, and D. Ogle. 2010. *Plant guide for breaks bladderpod (*Lesquerella rubicundula*) or Kodachrome bladderpod (*Lesquerella tumulosa*).* USDA-Natural Resources Conservation Service, Idaho Plant Materials Center. Aberdeen, Idaho. Published November 2010.

Tilley, D. 2012. *Plant Guide for Las Vegas buckwheat (*Eriogonum corymbosum *var*. nilesii*).* USDA-Natural Resources Conservation Service, Aberdeen, Idaho Plant Materials Center. 83210-0296. Published October 2012.

USFWS. 2008. *Siler pincushion cactus (*Pediocactus sileri*) 5-year review: summary and evaluation.* U.S. Fish and Wildlife Service, Arizona Ecological Services Office, Phoenix, Arizona.

———. 2011.*Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed and Candidate Plants.* Available at: http://www.fws.gov/utahfieldoffice/USFWS%20UtahFO%20Plant%20Survey%20Guidelines%20Final.pdf. Accessed on April 19, 2012.

———. 2012. *Federally Listed and Proposed Endangered, Threatened and Candidate Species and Critical Habitat in Utah – Species List by County*. Available at: http://www.fws.gov/utahfieldoffice/Documents/Lists/Species%20by%20County.pdf. Accessed on April 23, 2012.

Utah Native Plant Society. 2003-2013 [cited July 9, 2013]. Utah rare plant guide. [Internet]. A.J. Frates editor/coordinator. Salt Lake City, Utah: Utah Native Plant Society. Available at: http://www.utahrareplants.org. Accessed on April 23, 2012.

UNPS. 2009. Utah Native Plant Society Rare Plants of Utah List. Sego Lily 32(6): 8-17.

Woods, A.J., D.A. Lammers, S.A. Bryce, J.M. Omernik, R.L. Denton, M. Domeier, and J.A. Comstock. 2001. *Ecoregions of Utah*. Reston, Virginia: USGS.