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# Wetland Delineation Report

## Boulder Creek Commons Property

Boulder County, Colorado  
Corps File No. 1992-40-484

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## 1.0 Introduction

BCC, LLC has plans to develop a portion of the Hogan Pancost property located southwest of the East Boulder Community Park in unincorporated Boulder County (Figure 1). The project site is bisected by 55<sup>th</sup> Street, creating a 2.73 acre East Parcel and a 19.09 acre West Parcel. Specifically, the property is located in parts of Sections 3 and 4 of Township 1 North and Range 70 West in Boulder County, Colorado (Figure 2). This report describes the wetlands with respect to their vegetation, soils and indicators of a current wetland hydrology, and documents the condition of irrigation laterals and ditches on and adjacent to the project site, as well as a small pond that extends onto the East Parcel.

Wetlands on the project site were previously delineated by Western Ecological Resource in 2008 and 2011. The 2008 delineation was based on a Groundwater Hydrology Monitoring Study following termination of flood irrigation on the West Parcel (WER, 2008; WER, 2009). The 2011 delineation updated the study based on the hydrologic conditions at that time (WER, 2011). Further changes have occurred since flood irrigation was terminated; therefore, this study serves as a more recent update based on hydrologic conditions present during the 2016 growing season.

Please note, all Figures are located in Section 7.0, Tables are in Section 8.0 and Photographs are in Section 9.0. Appendix A contains the field data forms completed during the wetland delineation.

## 2.0 Environmental Setting

The Hogan Pancost project site is undeveloped except for several small sheds located on the West Parcel. Historically, the property has had an agricultural land use which likely extends back to the settlement era in the late 1800's (Hogan, 2008). Horses currently graze on the West and East Parcels, however the grazing has been much more intense on the West Parcel and has significantly affected the vegetation composition in both the wetland and upland habitats, reducing plant cover, and increasing the abundance of weeds and unpalatable species (Photo 1).

The West Parcel ranges in elevation from a high of 5,325 feet in the south to a low of 5,312 feet in the northwest. This parcel contains numerous small north- to northwest-trending swales and man-made laterals which were historically used to irrigate the site. Dry Creek Ditch #2 (Ditch) parallels the western boundary of the West Parcel, and is lined by wetlands (Photos 2 & 3). It has an earthen bottom which allows seepage, contributing an elevated groundwater table on the West Parcel and to the hydrology of nearby wetlands. The Ditch is filled by a diversion from a headgate on South Boulder Creek near Marshall, and flows to Middle Boulder Creek near Valmont Butte (Figure 3). In addition, several sump pumps from the Keewaydin Meadows neighborhood to the west discharge into the Ditch. Stormwater runoff from Keewaydin Meadows also enters the Ditch in the vicinity of Kewanee Drive.

The CD Bodam Lateral occurs along the south boundary of the West Parcel and is filled by water diverted from Dry Creek Ditch #2 (Figure 3). The CD Bodam Lateral was historically used to irrigate the West Parcel, but this was terminated in 2008 and a PVC liner was installed, which precludes wetland growth in the lateral and reduces seepage (Photos 4 & 5). The CD Bodam Lateral is still used to irrigate the Bodam property located south of the West Parcel. Mr. Bodam irrigates his seven-acre property during the growing season by using a pumping system to draw water from the lateral (Bodam, 2008). The lateral has been observed overtopping the liner where it is blocked, allowing water to flow onto the West Parcel (WER, 2011). Irrigation of the Bodam property contributes to the elevated groundwater table. In addition, the Bodam property contains an unlined ornamental pond that contributes to the groundwater table via seepage.

The Super-Phostical Lateral also crosses the eastern portion of the West Parcel and a small area of the northwestern corner (Photo 6). This lateral is a diversion from the Howard Ditch, which has a headgate along South Boulder Creek southeast of the East Parcel (Figure 3). The Super-Phostical Lateral fills a pond on the Kent Property located just south of and partially on the East Parcel (Photo 7), then crosses through the East (Photo 8) and West Parcels before eventually flowing into vaults that are used to irrigate the athletic fields near Manhattan Middle School. The Super-Phostical Lateral has an earthen bottom, which allows seepage, and is lined by wetlands.

The East Parcel has a relatively flat topography that extends from a high of 5,325 feet in the southwest to a low of 5,319 feet in the north along 55<sup>th</sup> Street. As described above, the Super-Phostical Lateral bisects the East Parcel, and South Boulder Creek is located approximately 180 feet east of the East Parcel. A small portion of the irrigation water storage pond on the Kent Property to the south extends into the southern portion of the East Parcel.

Historically, the entire project site was extensively flood irrigated beginning with settlement in the late 1800's (Hogan, 2008). Flood irrigation on the project site and seepage from the associated irrigation laterals, ditches and ponds, as well as irrigation of the surrounding landscape, has contributed to an elevated groundwater table and to the development of numerous wetland areas, particularly on the West Parcel.

Wetland investigations have been conducted on the site for many years, dating back to at least 1992 and continuing through the 2016 growing season. The early investigations were conducted by David Steinmann of Professional Wetlands Consulting, Inc. Mr. Steinmann provided a technical review letter for the Groundwater Hydrology Monitoring Study and Wetland Delineation Report prepared by Western Ecological Resource and submitted to the City of Boulder in January, 2009 (WER, 2009), which summarized his conclusions regarding the influence of the man-induced hydrology on wetlands of the project site. Over the years of his investigations, Mr. Steinmann observed that the extent of wetlands on the project site was directly dependent on the amount of irrigation water being applied to the land, and large fluctuations were observed from year to year depending on the volume of water being applied to the property. These observations are consistent with the investigations conducted on the project site by Western Ecological Resource since 2008, and described in the 2008, 2009, and 2011 wetland delineation reports.

As described above, flood irrigation practices were terminated on the West Parcel prior to the 2008 growing season to facilitate the groundwater hydrology monitoring study. Irrigation of the East Parcel has not been terminated, and occurred during the 2016 growing season. Specifically, the East Parcel is irrigated twice per growing season for about two weeks each time in conjunction with irrigation of the land south of the East Parcel (Bodam, 2016).

The vegetation of the project area is characterized by an upland pasture with heavy grazing impacts on the West Parcel, lightly grazed pasture areas on the East Parcel, dense weed infestations, man-induced wetlands as described below in Section 4.0, and a stand of plains cottonwood trees (*Populus deltoides*) on the east end of the East Parcel.

The upland pasture areas on the West Parcel are best developed in the swales just north of the CD Bodam Lateral where they have been historically flood irrigated, and likely still receive occasional overflows from the CD Bodam Lateral (Photo 9). These pasture areas have become drier following the termination of flood irrigation, with reduced vegetation cover and an increased abundance of weeds. The vegetation in these areas consists of a mixture of upland and facultative wetland plants. Some of the common graminoids include meadow fescue (*Festuca pratensis*), quackgrass (*Elytriga repens*), redtop (*Agrostis gigantea*), Baltic rush (*Juncus arcticus subsp. ater*), timothy (*Phleum pratense*), Canada bluegrass (*Poa compressa*), and orchard grass (*Dactylis glomerata*). Introduced forbs are abundant, including chicory (*Cichorium intybus*), narrow-leaf birds-foot trefoil (*Lotus tenuis*), curly dock (*Rumex crispus*), lanceleaf plantain (*Plantago lanceolata*), and red clover (*Trifolium pratense*).

Some small areas directly adjacent to the CD Bodam Lateral support hydrophytic vegetation that extends up onto the elevated bank of the ditch berm, but lack a wetland hydrology and are instead supported by overspray from sprinklers on the CD Bodam property (Photo 5).

Weedy areas occur in the slightly higher elevations of the West Parcel where prairie dogs have created disturbed habitats, as well as in mesic areas on the East Parcel (Photo 1). The weedy areas have significantly increased in size due to the termination of flood irrigation and the increased prairie dog activity on the West Parcel. These weed-dominated areas have a low vegetation cover composed of a diversity of Colorado state-listed noxious weeds and other introduced plants (Photo 10). Some of the most abundant weeds in the West Parcel include Scotch thistle (*Onopordum acanthium*), teasel (*Dipsacus fullonum*), alyssum (*Alyssum parviflorum*), Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), chicory, and mullein (*Verbascum thapsus*). The East Parcel contains large stands of teasel intermixed with the wetland plants, as well as stands of Canada thistle and a few Russian olive (*Elaeagnus angustifolia*) trees (Photo 11).

Finally, a small stand of plains cottonwood trees occurs in the eastern portion of the East Parcel. The understory is comprised of upland and facultative plants such as smooth brome (*Bromus inermis*), meadow fescue, Canada goldenrod (*Solidago canadensis*), and goldenbanner (*Thermopsis divaricarpa*). Table 1 lists the plant species observed on the project site during the wetland delineation in August 2016.

### **3.0 Methods**

Wetlands were delineated on August 22, 2016 by Heather Houston of Western Ecological Resource, Inc. and David Buscher of Buscher Soil and Environmental Consulting, Inc. in accordance with the U.S. Army Corps of Engineers Wetland Delineation Manual (1987) and the 2010 Great Plains Regional Supplement. Specifically, wetland boundaries were delineated and flagged based upon the prevalence of hydrophytic vegetation, hydric soils, and indicators of a current wetland hydrology including the presence of oxidized rhizospheres on living roots. In general, plant species names follow Weber and Whitmann (1992). The wetland status of plants follows the 2016 National Wetland Plant List for the Great Plains Region. Classification of wetlands follows Cowardin, et al. (1979). Wetland flagging was surveyed by Flatirons, Inc. of Boulder, Colorado on August 23, 2016.

#### **3.1 Agency Coordination**

The U.S. Army Corps of Engineers (Corps) has not yet visited the project site to review the August 2016 delineation. Terry McKee of the Corps reviewed and approved the previous delineation prepared by Western Ecological Resource during a field visit on September 12, 2011.

### **4.0 Wetlands, Ditches, and Aquatic Habitats**

Wetlands, ditches, and aquatic habitats identified on the East and West Parcels are illustrated by Figure 4, the Wetland Map. The project site contains 11 wetlands in the pasture area of the West Parcel; wetlands also occur along the Dry Creek Ditch #2 at the western boundary of the West Parcel, and in three areas along or near the Super-Phostical Lateral on the West Parcel. The East Parcel contains wetlands along the Super-Phostical Lateral that extend into low areas adjacent to the lateral, and at the northern margin of a small pond filled by the Super-Phostical Lateral. A small area of the Pond's aquatic habitat is also located within the East Parcel. Table 2 provides a summary of the wetlands, ditches, and aquatic habitats and their acreage within the East and West Parcels.

## 4.1 Wetlands A & B

### 4.1.1 Location & Landform

Wetlands A (0.06 ac) and B (0.03 ac) are located in shallow depressions in the southeastern corner of the West Parcel, just north of the CD Bodam Lateral (Photos 2 & 13).

### 4.1.2 Classification

Based on the Cowardin Classification System, (Cowardin, et al., 1979) Wetlands A and B are classified in the Palustrine System, Emergent Persistent wetland class.

### 4.1.3 Vegetation

Common species in Wetlands A and B include the native forbs Macoun's buttercup (*Ranunculus macounii*), white panicle aster (*Aster lanceolatus ssp. hesperius*) and largeleaf avens (*Geum macrophyllum*); introduced grasses including meadow fescue, redtop and Canada bluegrass; and native graminoids such as Emory sedge (*Carex emoryi*), clustered field sedge (*Carex praegracilis*), Nebraska sedge (*Carex nebrascensis*) and Baltic rush. Weedy forbs including narrow-leaf birdsfoot trefoil, prickly lettuce (*Lactuca serriola*), Canada thistle, and curly dock are also present near the wetland margin.

### 4.1.4 Hydrology

The hydrology of Wetlands A and B is provided by a seasonally high groundwater table. These wetlands have persisted in the absence of active irrigation on the West Parcel due to an elevated groundwater table caused by irrigation of the surrounding landscape and seepage from ditches and an unlined ornamental pond. Specifically, the groundwater is affected by irrigation on the Bodam property to the south, by irrigation water seeping through the unlined ornamental pond on the Bodam property, and by water occasionally overtopping the CD Bodam Lateral, as well as irrigation of the surrounding landscape which contributes to groundwater recharge.

### 4.1.5 Soils

Soil Pits 1 and 2 were used to define the limits of Wetlands A and B. Pit 1 is located in uplands outside Wetland B. The soil had a gravelly sandy clay loam texture, lacked redox features, and was not hydric. Pit 2 is located within Wetland B. The hydric soil in Pit 2 met indicator F6, Redox Dark Surface; it had a gravelly sandy clay loam texture and contained oxidized rhizospheres on living roots.

## 4.2 Wetlands C & D

### 4.2.1 Location & Landform

Wetlands C (0.26 ac) and D (0.01 ac) are located in a swale north of the CD Bodam Lateral, and west of Wetlands A and B (Photos 14 & 15).

### 4.2.2 Classification

Based on the Cowardin Classification System, (Cowardin, et al., 1979) Wetlands C and D are classified in the Palustrine System, Emergent Persistent wetland class.

### 4.2.3 Vegetation

The vegetation of Wetlands C and D is similar to Wetlands A and B. Some of the dominant species include redtop, Macoun's buttercup, meadow fescue, Emory sedge, quackgrass, Nebraska sedge, white panicle aster, Baltic rush, field mint (*Mentha arvensis*), curly dock, curly top knotweed (*Persicaria lapathifolia*), and northern willowherb (*Epilobium ciliatum*).

### 4.2.4 Hydrology

Similar to Wetlands A and B, the hydrology of Wetlands C and D is provided by a seasonally high groundwater table. These wetlands have persisted in the absence of active irrigation on the West

Parcel due to an elevated groundwater table caused by irrigation of the surrounding landscape and seepage from ditches and an unlined ornamental pond. Specifically, the groundwater is affected by irrigation on the Bodam property to the south, by irrigation water seeping through the unlined ornamental pond on the Bodam property, and by water occasionally overtopping the CD Bodam Lateral as well as irrigation of the surrounding landscape which contributes to groundwater recharge. It is likely that the unlined ornamental pond is a major factor affecting Wetland C, as it is located directly south. The swale could also collect a small volume of precipitation and snowmelt in Wetland C.

#### **4.2.5 Soils**

Three soil pits were used to define the boundary of Wetlands C and D: Pits 3, 5, and 7. Pit 3 is located in Wetland C, and contained a hydric soil with a Redox Dark Surface (F6) with a gravelly sandy clay loam texture. Pit 5 is in a disturbed area of Wetland C where hay had been placed for horses. This pit also had a hydric soil with a Redox Dark Surface (F6). Both pits contained oxidized rhizospheres on living roots. Pit 7 is located in the uplands just outside Wetland C. This pit lacked hydric soil and indicators of a wetland hydrology.

### **4.3 Wetland E**

#### **4.3.1 Location & Landform**

Wetland E (0.07 ac) is located in a depression north of the swale containing Wetland C (Photo 16).

#### **4.3.2 Classification**

According to Cowardin et. al. (1979) Wetland E is classified in the Palustrine System, Emergent Persistent wetland class.

#### **4.3.3 Vegetation**

Water smartweed (*Persicaria amphibia*) is the dominant species in Wetland E, growing with Nebraska sedge, foxtail barley (*Hordeum jubatum*), retop, birdsfoot trefoil (*Lotus corniculatus*), red clover, and Macoun's buttercup.

#### **4.3.4 Hydrology**

The hydrology of Wetland E is provided by a seasonally high groundwater table which is affected by irrigation water and the presence of nearby ditches and ponds. Specifically, the groundwater is elevated by irrigation on the Bodam property to the south; by irrigation water seeping through the unlined ornamental pond on the Bodam property; and by water occasionally overtopping the CD Bodam Lateral as well as irrigation of the surrounding landscape which contributes to groundwater recharge. The depression likely collects a small volume of snowmelt and precipitation runoff, and water from the swale to the south would be conveyed into the depression containing Wetland E.

#### **4.3.5 Soils**

Pit 4 was dug within the depression containing Wetland E. The hydric soil in the pit had a sandy clay loam texture near the surface, underlain by gravelly sandy clay loam, and had a Redox Dark Surface (F6). The soil was not saturated but had oxidized rhizospheres on living roots, which are indicative of a wetland hydrology.

### **4.4 Wetlands F & G**

#### **4.4.1 Location & Landform**

Wetlands F and G are small herbaceous wetlands (100 and 119 square feet, respectively) located in a man-made swale north of the CD Bodam Lateral (Photos 17 & 18). This swale was likely used to convey irrigation water from the CD Bodam Lateral to the West Parcel.

#### 4.4.2 Classification

According to Cowardin et. al. (1979) this wetland is classified as a Palustrine system, emergent wetland class, persistent subclass, with a saturated water regime.

#### 4.4.3 Vegetation

Showy milkweed (*Asclepias speciosa*), redtop and curly dock are the dominant vegetation in Wetlands F and G, where they grow with American yellowrocket (*Barbarea orthoceras*), white panicle aster, Emory sedge, and Nebraska sedge.

#### 4.4.4 Hydrology

These two wetlands are located near the southern property line, and are likely influenced by irrigation of the property to the south and leakage from the ornamental pond on the property to the south. The gravelly sandy clay loam soil texture is conducive to groundwater movement, which could allow water applied to the property to the south to influence the hydrology of the West Parcel. In addition, if water overtops the CD Bodam Lateral, it would collect in the swale containing Wetlands F and G.

#### 4.4.5 Soils

Pit 9 was dug in an area of hydrophytic vegetation adjacent to Wetland F. The soil in Pit 9 was not hydric and lacked indicators of a wetland hydrology, and therefore was excluded from the wetland boundary. A test pit confirmed the presence of hydric soils within Wetland F, however it was not formally described.

### 4.5 Wetland H

#### 4.5.1 Location & Landform

Wetland H (0.04 ac) is located in a swale north of the CD Bodam Lateral on the West Parcel (Photo 19).

#### 4.5.2 Classification

Based on the Cowardin Classification System, (Cowardin, et al., 1979) Wetland H is classified in the Palustrine System, Emergent Persistent wetland class.

#### 4.5.3 Vegetation

Wetland H is vegetated by redtop, water smartweed, Emory sedge, Macoun's buttercup, horehound (*Marrubium vulgare*), narrowleaf plantain, showy milkweed, and American yellowrocket. Orchard grass, naked spike ragweed (*Ambrosia psilostachya*), narrowleaf birdsfoot trefoil, crown vetch (*Coronilla varia*), prickly lettuce, and chicory are also common at the margins.

#### 4.5.4 Hydrology

Wetland H is located near the southern property line, and is likely influenced by irrigation of the property to the south and leakage from the ornamental pond on the property to the south. The gravelly sandy clay loam soil texture is conducive to groundwater movement, which could allow water applied to the property to the south, and irrigation of the surrounding landscape, to influence the hydrology of Wetland H on the West Parcel. In addition, if water overtops the CD Bodam Lateral, it would collect in the swale containing Wetland H.

#### 4.5.5 Soils

Pit 8 was dug in an area of hydrophytic vegetation adjacent to Wetland H. The soil in Pit 8 did not contain enough redox features to meet the hydric soil indicators, and there were no indicators of a current wetland hydrology. The texture was sandy clay loam in the upper six inches, underlain by very gravelly sandy loam. Pit 8 was excluded from the wetland boundary.

## 4.6 Wetland I

### 4.6.1 Location & Landform

Wetland I (0.49 ac) is located on a swale extending north from a topographically low area in the southwestern corner of the West Parcel, near the intersection of the CD Bodam Lateral and Dry Creek Ditch #2 (Photo 20).

### 4.6.2 Classification

According to Cowardin et. al. (1979) Wetland I is classified in the Palustrine system, Emergent Persistent wetland class. The areas dominated by sandbar willow are classified in the Scrub-Shrub wetland class, broadleaf deciduous subclass.

### 4.6.3 Vegetation

The lowest lying areas of the wetland are dominated by water smartweed and Macoun's buttercup, which are both obligate wetland plants. In the slightly higher topographic areas of the wetland, meadow fescue, Baltic rush, redtop, Nebraska sedge, jewelweed (*Impatiens capensis*), field mint, and white panicle aster occur. Near the northern end of the wetland is a stand of sandbar willow (*Salix exigua*). Common introduced plants and weeds in the wetland include horehound, Canada thistle, Kentucky bluegrass (*Poa pratensis*), and prickly lettuce.

### 4.6.4 Hydrology

Wetland I is partially supported by seepage from Dry Creek Ditch #2. In addition, irrigation that occurs south of the West Parcel elevates the groundwater levels and likely contributes to the wetland hydrology in this low-lying area of the West Parcel. The groundwater hydrology monitoring study discussed in the 2008 Wetland Delineation Report (WER, 2008) showed a direct correlation between water in Dry Creek Ditch #2 and water levels in the monitoring wells in this area. Overflows from the CD Bodam Lateral may also contribute to the wetland hydrology; in 2011, overflows from the CD Bodam Lateral were observed flowing into Wetland I. However, the water in the CD Bodam Lateral was stagnant during the delineation in August 2016 and was not overflowing.

### 4.6.5 Soils

Soil Pits 10, 11 and 12 were used to define the limits of Wetland I. Pit 10 was dug in the southern portion, within a swale extending north from the low area near the CD Bodam Lateral in an area dominated by Macoun's buttercup. The hydric soil had a sandy clay loam texture and met the redox dark surface (F6) criterion, and contained oxidized rhizospheres on living roots. Pit 11 was dug farther to the north, near the margin of the swale and just outside the wetland boundary. The soil was not hydric because the redox features were too deep to meet indicator F6 and it did not meet other hydric soil indicators. There were no indicators of a wetland hydrology. Pit 12 is located in the uplands just west of Wetland I. The soil had a sandy clay loam texture in the upper eight inches, and a very cobbly sandy loam below to 12 inches. There were no wetland hydrology indicators; therefore, Pit 12 was excluded from the wetland boundary.

## 4.7 Wetland J

### 4.7.1 Location & Landform

Wetland J (0.06 ac) is located in a swale north of the CD Bodam Lateral on the West Parcel, east of Wetland I and down gradient of Wetland H (Photo 21).

### 4.7.2 Classification

Based on the Cowardin Classification System, (Cowardin, et al., 1979) Wetland J is classified in the Palustrine System, Emergent Persistent wetland class.

### **4.7.3 Vegetation**

Wetland J is dominated by Macoun's buttercup, Nebraska sedge, redtop, and red fescue (*Festuca rubra*).

### **4.7.4 Hydrology**

Like the other wetlands on the West Parcel, Wetland J has a wetland hydrology from an elevated groundwater table due to seepage from Dry Creek Ditch #2 and irrigation of the surrounding landscape. Precipitation also has a minor contribution to the hydrology of this wetland.

### **4.7.5 Soils**

Soil Pits 13 and 14 were used to define the boundary of Wetland J. Pit 13 was located inside the swale and had hydric soil with a redox dark surface (F6). The soil texture was a sandy clay loam, and oxidized rhizospheres were identified on living roots, which are indicative of a current wetland hydrology. Pit 14 was located just outside the wetland boundary on a higher area next to the swale. The soil was not hydric because the redox features were too deep in the soil profile. There were no indicators of a wetland hydrology.

## **4.8 Wetland K**

### **4.8.1 Location & Landform**

Wetland K (0.02 ac) is located in a shallow depression just east of Dry Creek Ditch #2 and north of Wetland I (Photo 22).

### **4.8.2 Classification**

Based on the Cowardin Classification System, (Cowardin, et al., 1979) Wetland K is classified in the Palustrine System, Emergent Persistent wetland class.

### **4.8.3 Vegetation**

Some of the common species in Wetland K include redtop, Baltic rush, meadow fescue, Nebraska sedge, Macoun's buttercup, and showy milkweed. The noxious weeds Canada thistle, quackgrass, and one small Russian olive tree are also present near the wetland margin.

### **4.8.4 Hydrology**

Wetland K is supported by seepage from water in Dry Creek Ditch #2, which has an earthen bottom, and is augmented by stormwater and sump-pump flows from the Keewaydin Meadows residential neighborhood. The 2008 Groundwater Hydrology Monitoring Study (WER, 2008) showed a direct correlation between water in Dry Creek Ditch #2 and water levels in the monitoring wells in this area. Precipitation and snowmelt could also collect in this swale.

### **4.8.5 Soils**

Pit 15 was dug in the uplands adjacent to Wetland K. In this area, the soil was hydric with a redox dark surface and a loam texture in the upper horizon underlain by a very cobbly sandy loam below seven inches. There were indicators of a wetland hydrology, including oxidized rhizospheres on living roots, but the vegetation was not hydrophytic. Therefore, this area was excluded from the wetland boundary and the hydrophytic vegetation in the lower topography of the swale was mapped inside the wetland boundary.

## **4.9 Dry Creek Ditch #2 Wetland**

### **4.9.1 Location & Landform**

The 0.24 acre Dry Creek Ditch #2 Wetland occurs along the western edge of the project area and flows to the north (Photos 2 & 3).

#### 4.9.2 Classification

According to Cowardin et. al. (1979) wetlands along Dry Creek Ditch #2 are classified in the Palustrine system, Emergent Persistent wetland class. The areas dominated by sandbar willow are classified in the Scrub-Shrub wetland class, broadleaf deciduous subclass.

#### 4.9.3 Vegetation

Vegetation along the Ditch is comprised of both herbaceous and shrubby areas. The most common wetland forbs in the saturated soil habitat include Macoun's buttercup, water speedwell (*Veronica anagalis aquatica*), northern willowherb, jewelweed, and yellow flag iris (*Iris pseudacorus*). Common wetland graminoids include clustered field sedge, Nebraska sedge and American mannagrass (*Glyceria grandis*). Riparian shrubs and trees occur along portions of the ditch and include plains cottonwood, crack willow (*Salix fragilis*), sandbar willow, chokecherry (*Prunus virginiana ssp. melanocarpa*), wild plum (*Prunus americana*), Woods' rose (*Rosa woodsii*), and green ash (*Fraxinus pensylvanica*). Other common forbs along the wetland margin include weeds such as burdock, teasel and Canada thistle, and the introduced species crown vetch and horehound.

#### 4.9.4 Hydrology

Dry Creek Ditch #2 conveys water from a headgate on South Boulder Creek near Marshall to Middle Boulder Creek near Valmont Butte (Figure 3). Seasonal irrigation flows create saturated soil conditions and shallow ponded water in the Ditch. In addition, the Ditch receives groundwater from sump-pumps and stormwater runoff from the adjacent Keewaydin Meadows neighborhood. It has an earthen bottom which allows seepage, contributing an elevated groundwater table on the West Parcel and to the hydrology of nearby wetlands.

#### 4.9.5 Soils

No soils were described from within the wetland boundaries along Dry Creek Ditch #2. However, the soils are likely hydric and similar in texture to the adjacent soil pits.

### 4.10 Wetlands L & M

#### 4.10.1 Location & Landform

Wetlands L and M occur adjacent to the Super-Phostical Lateral on the West Parcel. These small wetlands measure 461 and 158 square feet, respectively (Photos 23 & 24).

#### 4.10.2 Classification

According to Cowardin et. al. (1979) Wetland L is classified in the Palustrine system, Emergent Persistent wetland class. The areas dominated by sandbar willow are classified in the Scrub-Shrub wetland class, broadleaf deciduous subclass. Wetland M is a Palustrine Emergent Persistent Wetland.

#### 4.10.3 Vegetation

Where water flows into a plastic irrigation pipe that conveys flows from the Super-Phostical Lateral over Dry Creek Ditch # 2, there is an area of shallow ponded water in Wetland L that supports broadleaf arrowhead (*Sagittaria latifolia*), nodding beggar tick (*Bidens cernua*), and broadleaf cattail (*Typha latifolia*) (Photo 23). Other species in the area include American mannagrass, softstem bulrush (*Scirpus validus*), woolly sedge (*Carex lanuginosa*), jointed rush (*Juncus articulatus*), and northern willowherb. The eastern portion of this wetland is comprised of a dense stand of sandbar willows. Wetland M is dominated by Emory sedge.

#### **4.10.4 Hydrology**

Wetland L is on a segment of the Super-Phostical Lateral and is supported by seasonal flows in the lateral. Wetland M is located in a low area along the fence line south of the lateral, and the hydrology is provided by seepage from the lateral.

#### **4.10.5 Soils**

No soils were officially described from within these wetlands; however, a test pit was evaluated to confirm the presence of hydric soils in Wetland M.

### **4.11 Super-Phostical Lateral Wetland**

#### **4.11.1 Location & Landform**

The 0.09 acre Super-Phostical Lateral Wetland is located on the segment of the Super-Phostical Lateral that flows through the eastern portion of the West Parcel (Photo 6).

#### **4.11.2 Classification**

According to Cowardin et. al. (1979) the Super-Phostical Lateral Wetland is classified in the Palustrine system, Emergent Persistent wetland class.

#### **4.11.3 Vegetation**

The Super-Phostical Lateral in this area is approximately two feet wide and is bordered by wetland plants such as American mannagrass, water smartweed, nodding beggar tick, Macoun's buttercup, northern willowherb, reed canarygrass (*Phalaris arundinacea*), and woolly sedge. The noxious weed teasel is abundant at the wetland margin and in the adjacent moist soil habitats.

#### **4.11.4 Hydrology**

The Super-Phostical Lateral receives water from the Howard Ditch near its diversion from South Boulder Creek located southeast of the project area. This water flows from the headgate on the Howard Ditch to a small pond on the Kent property, south of the East Parcel. The lateral flows northwesterly from the pond and bisects the East Parcel, passes under 55th Street, and continues northwesterly across the northeast corner of the West Parcel onto East Boulder Community Park. The lateral turns southwesterly and crosses the West Parcel again at the northwest corner, where it flows into a culvert and crosses over Dry Creek Ditch No. 2 and then into underground vaults for irrigation water for the athletic fields at the Manhattan Middle School. Finally, the lateral may travel north to some private properties. The Super-Phostical Lateral appears to have a small volume of water most of the year, and the earthen bottom allows water to seep from the ditch, contributing to the groundwater.

#### **4.11.5 Soils**

No soils were described from within the wetland boundaries along the Super-Phostical Lateral. However, the soils are assumed to be hydric due to flows in the ditch.

### **4.12 Wetland N**

#### **4.12.1 Location & Landform**

The 0.22 acre Wetland N is located on the East Parcel, and encompasses a segment of the Super-Phostical Lateral and the low areas adjacent to the lateral, as well as the wetland at the margin of the small pond (Photos 7 & 8).

#### **4.12.2 Classification**

According to Cowardin et. al. (1979) Wetland N is classified in the Palustrine System, Emergent Persistent wetland class.

#### **4.12.3 Vegetation**

Some of the dominant species in Wetland N include Nebraska sedge, redtop, Emory sedge, meadow fescue, Baltic rush, and the noxious weed teasel. Near the small pond at the southern boundary, the native forb Canada goldenrod grows with abundant redtop in the saturated soil habitat. Mature stands of crack willow also occur along the southern boundary of the East Parcel, where a few native plains cottonwood trees also occur. Plains cottonwoods are the dominant species in the upland area at the easternmost end of the East Parcel.

#### **4.12.4 Hydrology**

This wetland has a man-induced wetland hydrology provided by flows in the Super-Phostical Lateral and active irrigation during the growing season. In addition, the Super-Phostical Lateral is unlined, which allows irrigation water to seep out and elevate groundwater levels adjacent to the lateral. Flood irrigation occurs when the property owners to the south, J.F. and M.B. Kent, flood irrigate their hayfield; twice per summer for two weeks each time (Bodam, 2016).

#### **4.12.5 Soils**

Soil Pits 16, 17 and 18 were used to determine the boundary of Wetland N on the East Parcel. Pits 16 and 17 are paired pits located along the wetland boundary. Pit 16 is in the upland position in an area dominated by hydrophytes, but it lacked hydric soil and indicators of a wetland hydrology. The texture was sandy clay loam near the surface, with gravelly sandy clay loam below. Pit 17, located within the wetland boundary, contained hydric soil with a redox dark surface (F6), and had oxidized rhizospheres on living roots. The soil in Pit 17 had a sandy clay loam texture in the upper 6 inches, and a very gravelly sandy clay loam between 6-10 inches. Pit 18 was dug in a low area west of Wetland N dominated by Emory sedge and Nebraska sedge. The soil was not hydric in Pit 18, and it lacked indicators of a wetland hydrology. Pit 18 was excluded from the wetland boundary.

### **5.0 Analysis of Jurisdictional Status**

The U.S. Army Corps of Engineers has previously reviewed the jurisdictional status of wetlands on the East and West Parcels. However, due to changes in Corps regulations and the time that has elapsed, a new jurisdictional determination will be required.

Dry Creek Ditch #2 has an earthen bottom and is lined by wetlands. The Ditch conveys water from a diversion on South Boulder Creek through the project site, and a portion of the flow reaches Middle Boulder Creek. Therefore Dry Creek Ditch #2 is likely jurisdictional.

The CD Bodam Lateral is lined by PVC and the channel does not contain wetlands. This lateral is connected to Dry Creek Ditch #2 at the southwestern corner of the West Parcel. In the past, Terry McKee of the Corps determined that the CD Bodam Lateral was not jurisdictional. The Corps will evaluate the jurisdictional status based on current regulations. Likewise, the Super-Phostical Lateral was determined to be not jurisdictional by Terry McKee, but the status of all ditches and laterals will be reviewed on a case-by-case basis based on current regulations.

Due to the man-induced hydrology of wetlands in the West Pasture, Terry McKee previously determined that these wetlands were preamble waters, and hence non-jurisdictional (33 CFR Part 328). The wetlands delineated in 2016 have persisted in low areas and swales in the absence of active irrigation on the West Parcel, due to an elevated groundwater table caused by irrigation of the surrounding landscape and seepage from ditches and an unlined ornamental pond. The jurisdictional status of these wetlands will likely be tied to the status of the CD Bodam Lateral and/or Dry Creek Ditch #2.

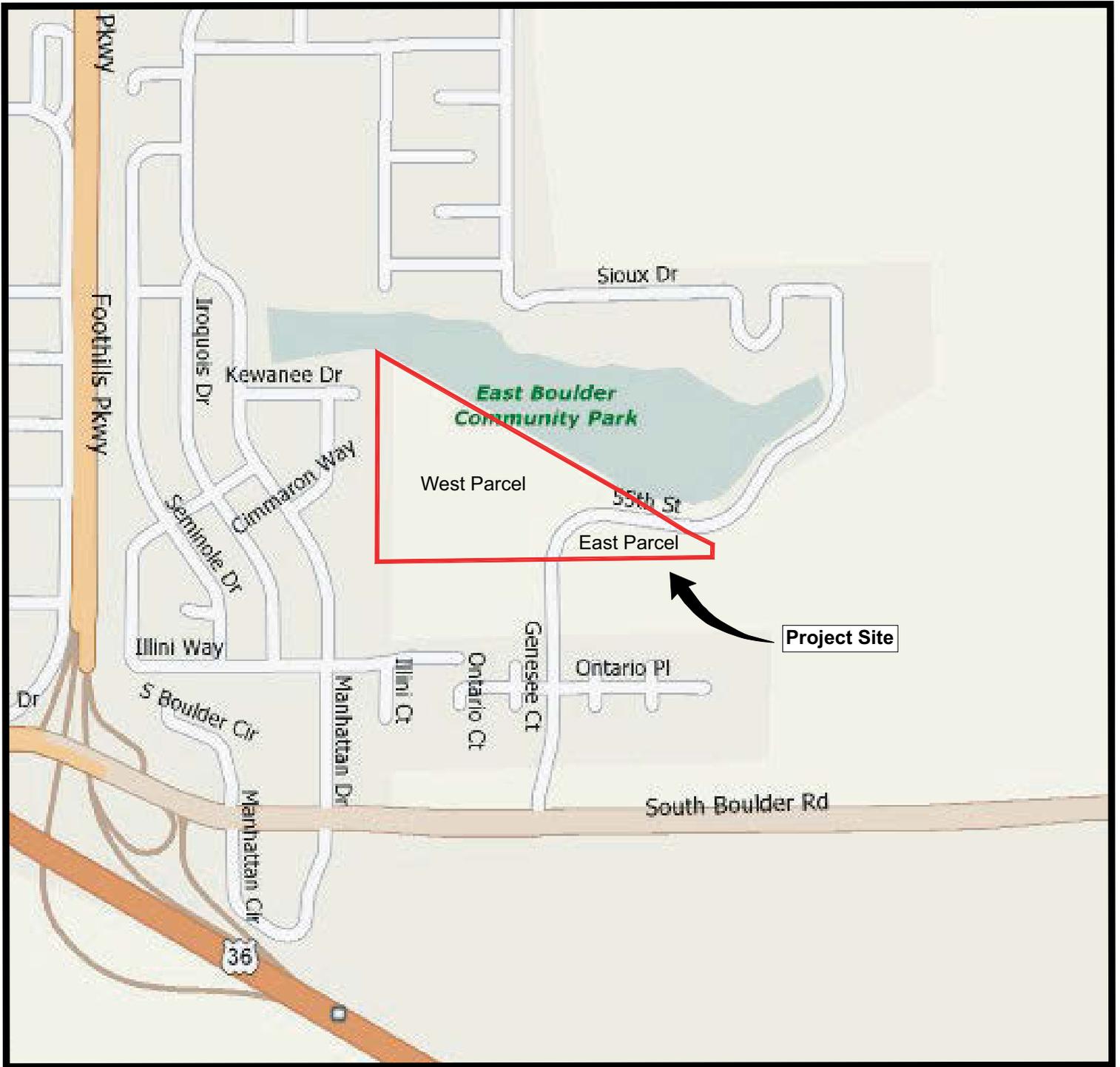
Wetland N on the East Parcel is actively irrigated and also occurs along the Super-Phostical Lateral and an on-channel pond. If the Super-Phostical Lateral is determined to be jurisdictional, Wetland N will likely also be jurisdictional.

## 6.0 References

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**7.0 Figures**



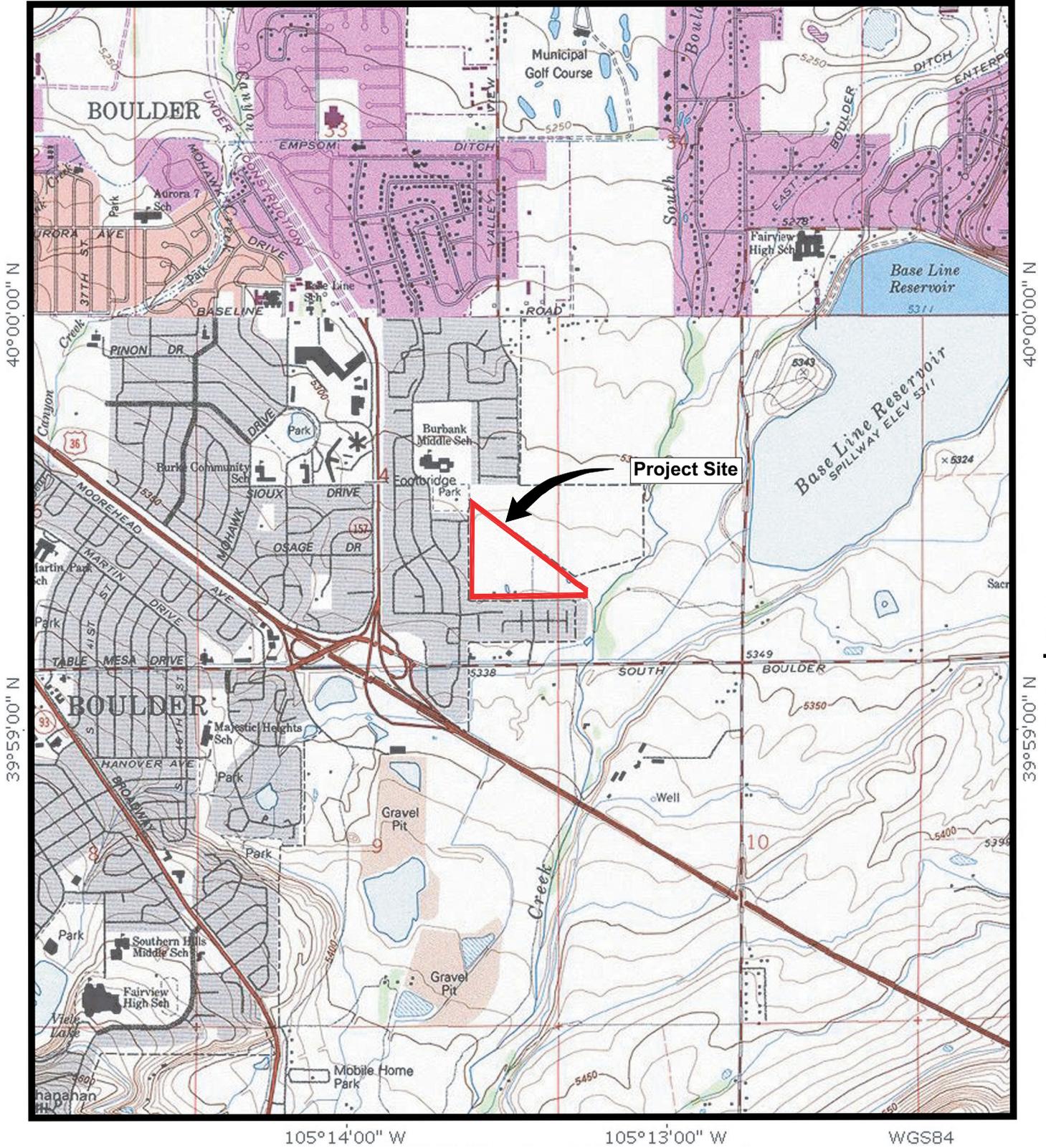
BASE: Map Data Mapquest 2008 NAVETQ or TeleAtlas

**FIGURE 1. Vicinity Map  
Hogan Pancost Property**



Scale 1" = 600'





BASE: USGS 7.5 Minute Louisville, Colorado Quadrangle  
Photorevised: 1990

**FIGURE 2. Project Location Map  
Hogan Pancost Property**



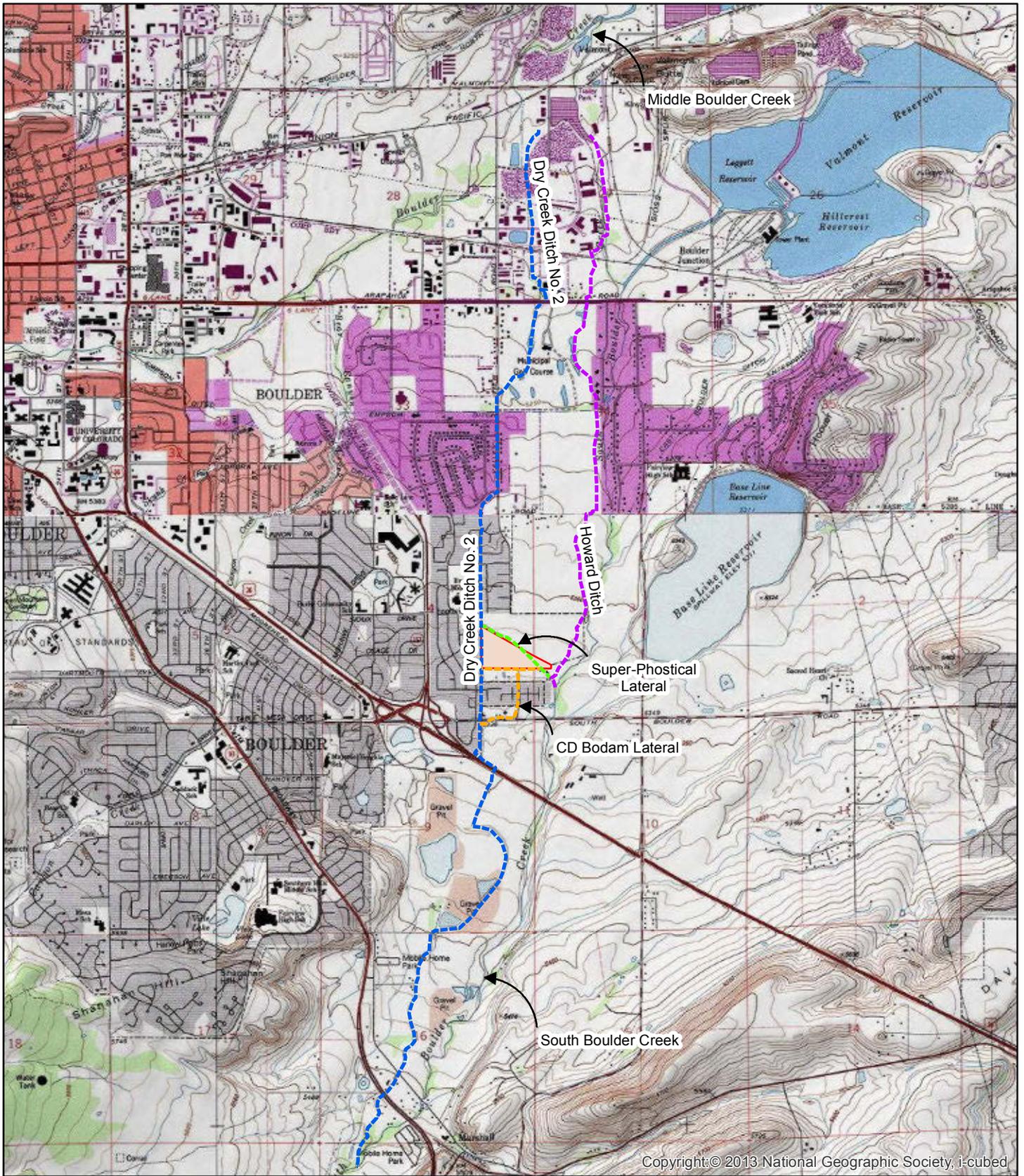
Map Location



**WESTERN  
ECOLOGICAL  
RESOURCE, INC.**  
711 Walnut Street • Boulder, CO 80302



Scale 1" = 2000'  
Contour Interval = 10'



**Legend**

- Project Site
- Dry Creek Ditch No. 2
- Howard Ditch
- CD Bodam Lateral
- Super-Phostical Lateral

Date: September 2016  
 Background: USGS Topo Maps  
 Scale: 1:40,000  
 1 inch = 3,333 feet



**Figure 3. Ditches & Laterals  
 Boulder Creek Commons**

**Figure 4. 2016 Wetland Delineation Map  
Boulder Creek Commons Property**

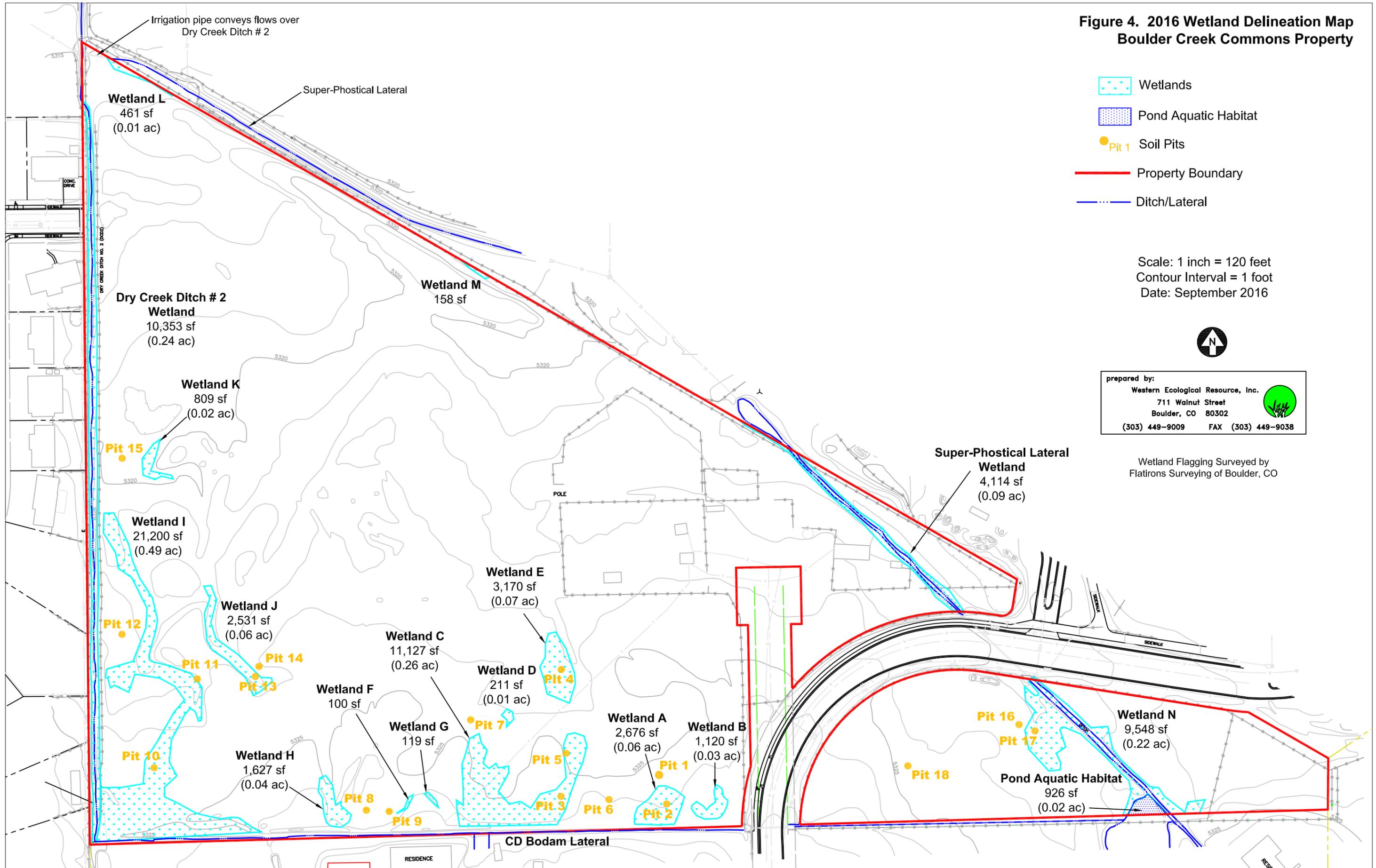
-  Wetlands
-  Pond Aquatic Habitat
-  Pit 1 Soil Pits
-  Property Boundary
-  Ditch/Lateral

Scale: 1 inch = 120 feet  
 Contour Interval = 1 foot  
 Date: September 2016



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Wetland Flagging Surveyed by  
 Flatirons Surveying of Boulder, CO



## 8.0 Tables

**TABLE 1**  
**Vascular Plant Species List**  
**Boulder Creek Commons Property**

<u>Scientific Name</u>	<u>Common Name</u>	<u>Family</u>	<u>Origin*</u>	<u>Wetland Status**</u>
<b>Trees</b>				
<i>Acer negundo</i>	Boxelder	Aceraceae	N	FAC
<i>Elaeagnus angustifolia</i>	Russian olive	Eleagnaceae	I+	FACU
<i>Fraxinus pennsylvanica</i>	Green Ash	Oleaceae	I	FAC
<i>Salix fragilis</i>	Crack willow	Salicaceae	I	NL
<i>Ulmus pumila</i>	Siberian elm	Ulmaceae	I	UPL
<b>Shrubs</b>				
<i>Prunus americana</i>	Wild plum	Rosaceae	N	UPL
<i>Prunus virginiana</i> var. <i>melanocarpa</i>	Chokecherry	Rosaceae	N	FACU
<i>Rosa woodsii</i>	Woods' rose	Rosaceae	N	FACU
<i>Salix exigua</i>	Sandbar willow	Salicaceae	N	FACW
<b>Perennial Graminoids</b>				
<i>Agrostis gigantea</i> ( <i>A. alba</i> )	Redtop	Poaceae	I	FACW
<i>Alopecurus pratensis</i>	Meadow foxtail	Poaceae	I	FACW
<i>Bromus inermis</i>	Smooth brome	Poaceae	I	UPL
<i>Carex bebbii</i>	Bebb sedge	Cyperaceae	N	OBL
<i>Carex emoryi</i>	Emory sedge	Cyperaceae	N	OBL
<i>Carex lanuginosa</i>	Woolly sedge	Cyperaceae	N	OBL
<i>Carex nebrascensis</i>	Nebraska sedge	Cyperaceae	N	OBL
<i>Carex praegracilis</i>	Clustered field sedge	Cyperaceae	N	FACW
<i>Chondrosium gracile</i>	Blue grama	Poaceae	N	NL
<i>Dactylis glomerata</i>	Orchard grass	Poaceae	I	FACU
<i>Eleocharis palustris</i>	Creeping spikerush	Cyperaceae	N	OBL
<i>Elytrigia repens</i> ( <i>Elymus</i> )	Quackgrass	Poaceae	I+	FACU
<i>Festuca pratensis</i>	Meadow fescue	Poaceae	I	FACU
<i>Festuca rubra</i>	Red fescue	Poaceae	N	FAC
<i>Glyceria grandis</i> ( <i>G. maxima</i> )	American mannagrass	Poaceae	N	OBL
<i>Hordeum jubatum</i>	Foxtail barley	Poaceae	N	FACW
<i>Juncus arcticus</i> ssp. <i>ater</i> ( <i>J. balticus</i> )	Baltic rush	Juncaceae	N	FACW
<i>Juncus articulatus</i>	Jointed rush	Juncaceae	I	OBL
<i>Juncus tenuis</i>	Slender rush	Juncaceae	N	FAC
<i>Juncus torreyi</i>	Torrey's rush	Juncaceae	N	FACW
<i>Pascopyrum smithii</i>	Western wheatgrass	Poaceae	N	FACU
<i>Phalaris arundinacea</i>	Reed Canarygrass	Poaceae	I	FACW
<i>Phleum pratense</i>	Timothy	Poaceae	I	FACU
<i>Poa compressa</i>	Canada bluegrass	Poaceae	I	FACU
<i>Poa pratensis</i>	Kentucky bluegrass	Poaceae	I	FACU
<i>Scirpus validus</i>	Softstem bulrush	Cyperaceae	N	OBL
<i>Spartina pectinata</i>	Prairie cord grass	Poaceae	N	FACW

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<u>Scientific Name</u>	<u>Common Name</u>	<u>Family</u>	<u>Origin*</u>	<u>Wetland Status**</u>
<i>Typha latifolia</i>	Broadleaf cattail	Typhaceae	N	OBL
<b>Perennial Forbs</b>				
<i>Achillea millefolium</i>	Yarrow	Asteraceae	N	FACU
<i>Ambrosia psilostachya</i>	Naked spike ragweed	Asteraceae	N	FACU
<i>Asclepias speciosa</i>	Showy milkweed	Asclepiadaceae	N	FAC
<i>Asparagus officinalis</i>	Asparagus	Liliaceae	I	FACU
<i>Aster ericoides</i>	White heath aster	Asteraceae	N	FACU
<i>var. ericoides</i>				
<i>Aster lanceolatus</i>	White panicle aster	Asteraceae	N	FACW
<i>ssp. hesperius</i>				
<i>Barbarea orthoceras</i>	Wintercress	Brassicaceae	N	OBL
<i>Cardaria draba</i>	White top	Brassicaceae	I+	NL
<i>Cichorium intybus</i>	Chicory	Asteraceae	I+	FACU
<i>Cirsium arvense</i>	Canada thistle	Asteraceae	I+	FACU
<i>Cirsium vulgare</i>	Bull thistle	Asteraceae	I+	UPL
<i>Convolvulus arvensis</i>	Field bindweed	Convolvulaceae	I+	NL
<i>Daucus carota</i>	Wild carrot	Apiaceae	I	UPL
<i>Epilobium ciliatum</i>	Northern willowherb	Onagraceae	N	FACW
<i>Gaura mollis</i>	Velvetleaf butterfly	Onagraceae	N	UPL
( <i>Oenothera curtifolia</i> )	weed			
<i>Geum macrophyllum</i>	Largeleaf avens	Rosaceae	N	FACW
<i>Glycyrrhiza lepidota</i>	Wild licorice	Fabaceae	N	FACU
<i>Iris pseudacorus</i>	Yellow flag iris	Iridaceae	I	OBL
<i>Lepidium latifolium</i>	Broad leaf peppergrass	Brassicaceae	I+	FACW
<i>Leucanthemum vulgare</i>	Ox-eye daisy	Asteraceae	I+	UPL
<i>Malva neglecta</i>	Common mallow	Malvaceae	I	NL
<i>Marrubium vulgare</i>	Horehound	Lamiaceae	I	FACU
<i>Mentha arvensis</i>	Field mint	Lamiaceae	N	FACW
<i>Persicaria amphibia</i>	Water smartweed	Polygonaceae	N	OBL
<i>Persicaria maculata</i>	Lady's thumb	Polygonaceae	I	FACW
<i>Plantago lanceolata</i>	English plantain	Plantaginaceae	I	FAC
<i>Plantago major</i>	Common plantain	Plantaginaceae	I	FAC
<i>Ranunculus macounii</i>	Macoun's buttercup	Ranunculaceae	N	OBL
<i>Rumex crispus</i>	Curly dock	Polygonaceae	I	FAC
<i>Sagittaria latifolia</i>	Arrowhead	Alismataceae	N	OBL
<i>Securigera varia</i>	Crown vetch	Fabaceae	I	NL
( <i>Coronilla varia</i> )				
<i>Solidago canadensis</i>	Canada goldenrod	Asteraceae	N	FACU
<i>Taraxacum officinale</i>	Dandelion	Asteraceae	I	FACU
<i>Thermopsis divaricarpa</i>	Spreading goldenbanner	Fabaceae	N	FAC
<i>Trifolium pratense</i>	Red clover	Fabaceae	I	FACU
<i>Trifolium repens</i>	White Dutch clover	Fabaceae	I	FACU
<i>Verbena bracteata</i>	Prostrate vervain	Verbenaceae	I	
<i>Veronica anagallis-aquatica</i>	Water speedwell	Scrophulariaceae	N	OBL

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<u>Scientific Name</u>	<u>Common Name</u>	<u>Family</u>	<u>Origin*</u>	<u>Wetland Status**</u>
<b>Annual/Biennial Graminoids</b>				
<i>Bromus japonicus</i>	Japanese brome	Poaceae	I	FACU
<i>Bromus tectorum</i>	Cheatgrass	Poaceae	I+	NL
<b>Annual/Biennial Forbs</b>				
<i>Alyssum parviflorum</i>	Alyssum	Brassicaceae	I	NL
<i>Amaranthus blitoides</i>	Mat amaranth	Amaranthaceae	I	FAC
<i>Arctium minus</i>	Common burdock	Asteraceae	I+	FACU
<i>Bidens cernua</i>	Nodding beggar tick	Asteraceae	N	OBL
<i>Carduus nutans</i>	Musk thistle	Asteraceae	I+	FACU
<i>ssp. macrolepis</i>				
<i>Centaurea diffusa</i>	Diffuse knapweed	Asteraceae	I+	
<i>Chenopodium album</i>	Lambs quarters	Chenopodiaceae	I	FACU
<i>Conium maculatum</i>	Poison hemlock	Apiaceae	I+	FACW
<i>Conyza canadensis</i>	Canada horseweed	Asteraceae	I	FACU
<i>Cynoglossum officinale</i>	Houndstongue	Boraginaceae	I+	FACU
<i>Dipsacus fullonum</i>	Teasel	Dipsacaceae	I+	FACU
<i>ssp. sylvestris</i>				
<i>Impatiens capensis</i>	Jewelweed	Balsaminaceae	N	
<i>Lactuca serriola</i>	Prickly lettuce	Asteraceae	I	FAC
<i>Oenothera villosa</i>	Hairy evening primrose	Onagraceae	N	FACU
<i>Persicaria lapathifolia</i>	Curlytop knotweed	Polygonaceae	N	OBL
<i>Verbascum thapsus</i>	Great mullein	Scrophulariaceae	I+	UPL

\* Origin

N = Native  
I = Introduced  
I+ = Colorado State Noxious Weed

\*\* Wetland Status

OBL = Obligate Wetland  
FACW = Facultative Wetland  
FAC = Facultative  
FACU = Facultative Upland  
UPL = Obligate Upland  
NO/NL = No Status in this Region

**TABLE 2**  
**Summary of Wetlands, Ditches, and Aquatic Habitats**  
**Boulder Creek Commons Property**  
**September 2016**

<u>West Parcel</u>	<u>Area (ft<sup>2</sup>)</u>	<u>Area (acres)</u>
Wetland A	2,676	0.06
Wetland B	1,120	0.03
Wetland C	11,127	0.26
Wetland D	211	0.01
Wetland E	3,170	0.07
Wetland F	100	< .01
Wetland G	119	< .01
Wetland H	1,627	0.04
Wetland I	21,200	0.49
Wetland J	2,531	0.06
Wetland K	809	0.02
Wetland L	461	0.01
Wetland M	158	<0.01
Dry Creek Ditch #2 Wetland	10,353	0.24
Super-Phostical Lateral Wetland	4,114	0.09
<b>Subtotal West Parcel</b>	<b>59,776</b>	<b>1.37</b>
<u>East Parcel</u>		
Wetland N	9,548	0.22
Irrigation Pond Aquatic Habitat	926	0.02
<b>Subtotal East Parcel</b>	<b>10,474</b>	<b>0.24</b>
<b>Total Wetlands</b>	<b>69,324</b>	<b>1.59</b>
<b>Total Pond Aquatic Habitat</b>	<b>926</b>	<b>0.02</b>
 <b>GRAND TOTAL</b>	 <b>70,250</b>	 <b>1.61</b>

**9.0 Photos**



**Photo 1.** Upland pasture area of the West Parcel with reduced vegetation cover due to heavy grazing and the termination of irrigation practices in 2008. (8/29/16).



**Photo 2.** Dry Creek Ditch # 2 is lined by wetlands and has an earthen bottom that allows seepage, contributing to the groundwater near the ditch. (8/22/16).



**Photo 3.** Stand of sandbar willows along Dry Creek Ditch #2 near the western boundary of the West Parcel. (8/22/16).



**Photo 4.** The CD Bodam Lateral has a PVC liner and is used to irrigate the property south of the West Parcel by blocking the ditch and pumping water into a sprinkle irrigation system. (8/29/16).



**Photo 5.** Vegetation along the CD Bodam Lateral receives some overspray from the sprinkle irrigation system. Irrigation of the surrounding properties elevates the groundwater table on the West Parcel. (8/29/16).



**Photo 6.** The Super-Phostical Lateral Wetland on the West Parcel is bordered by dense stands of the noxious weed teasel. (8/22/16).



**Photo 7.** A small pond is partially located on the East Parcel and is surrounded by wetlands. This area bordering the pond is a part of Wetland N. (8/22/16).



**Photo 8.** The Super-Phosticle Lateral through Wetland N on the East Parcel is lined by dense stands of the noxious weed teasel. American manna grass, a desirable native, is common in the shallow water at the edge of the ditch. (8/22/16).



**Photo 9.** Upland pasture area in a swale on the West Parcel. The vegetation has been heavily grazed and is no longer irrigated. (8/22/16).



**Photo 10.** Weed-dominated area of the West Parcel with dense growth of Scotch thistle and teasel. (9/9/16).



**Photo 11.** Dense stands of the noxious weed teasel on the East Parcel. (8/1/16).



**Photo 12.** Wetland A is located near the southeastern corner of the pasture in the West Parcel, just north of the CD Bodam Lateral. (8/22/16).



**Photo 13.** Wetland B is just north of the CD Bodam Lateral. (8/22/16).



**Photo 14.** Dense growth of Macoun's buttercup in Wetland C, located in a swale extending north from the area of the CD Bodam Lateral. (8/22/16).



**Photo 15.** Wetland D. (8/22/16).



**Photo 16.** Wetland E is in a depression dominated by water smartweed. (8/22/16).



**Photo 17.** Wetland F is in a narrow man-made irrigation diversion ditch just north of the CD Bodam Lateral. (8/22/16).



**Photo 18.** Wetland G is in the same small ditch just east of Wetland F. (8/22/16).



**Photo 19.** Wetland H is just north of the CD Bodam Lateral, in a swale once used to convey irrigation water. (8/22/16).



**Photo 20.** This area of Wetland I is dominated by the native shrub sandbar willow, and is located just east of Dry Creek Ditch #2. (8/22/16).



**Photo 21.** Wetland J is in a swale that once conveyed irrigation water through the pasture on the West Parcel. Macoun's buttercup is the dominant species in this heavily grazed area. (8/22/16).



**Photo 22.** Wetland K is in a swale down gradient of Wetland J and east of Dry Creek Ditch #2. (8/22/16).



**Photo 23.** The Super-Phosticle Lateral in Wetland L has a small ponded area where it flows into an irrigation pipe near the northwestern corner of the West Parcel. (8/22/16).



**Photo 24.** Wetland M is in a low area that is supported by seepage from the Super-Phosticle Lateral. (8/22/16).

**Appendix A. 2016 Wetland Delineation Data Forms**

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hoagland Pasture City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: JBCC State: CO Sampling Point: Pit 1  
 Investigator(s): Houston + Buscher Section, Township, Range: Sec 4 T19 R70W  
 Landform (hillslope, terrace, etc.): slight swale Local relief (concave, convex, none): concave Slope (%): —  
 Subregion (LRR): G-W Great Plains Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Nh - Niwot Soils 0-1% NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
---	---

Remarks: Historically irrigated pasture north of CD Bodum Lateral Ditch in slight swale north of WL #300. Paired w/ Pit 2 in WL #300

**VEGETATION – Use scientific names of plants. Below avg. precip in July + Aug. 2016.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>N/A</u>				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____				
3. _____				
4. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>N/A</u>				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Agrostis alba</u>	<u>35</u>	<u>N</u>	<u>FACW</u>	
2. <u>Sheddenurus pratensis</u>	<u>60</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Lotus corniculatus</u>	<u>2</u>	<u>N</u>	<u>FACU</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
<u>97</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>X</u>
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>3</u> _____ = Total Cover				

Remarks: \_\_\_\_\_

SOIL

Hogen Pancost 8/22/16

Sampling Point: 1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR2/2	100	—	—	—	—	fine scl	
6-12	10YR2.5/3	100	—	—	—	—	1 scl	

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<b>(where not tilled)</b>	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

**Wetland Hydrology Present?** Yes \_\_\_\_\_ No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: J BCC State: CO Sampling Point: Pit 2  
 Investigator(s): Houston & Burchler Section, Township, Range: Sec. 4 T1N R70W  
 Landform (hillslope, terrace, etc.): slight swale Local relief (concave, convex, none): concave Slope (%):       
 Subregion (LRR): 6 Lat:      Long:      Datum:       
 Soil Map Unit Name: NH - Niwot Soils NWI classification:       
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes      No X (If no, explain in Remarks.)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>	
Remarks: <u>Historically flood irrigated - Below avg. precip in July &amp; Aug. Closer to fence line &amp; irrigation ditch to south (paired w Pit 1)</u>			

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>N/A</u>				
2. <u>    </u>				
3. <u>    </u>				
4. <u>    </u>				
				= Total Cover
Sapling/Shrub Stratum (Plot size: <u>10x10'</u> )				
1. <u>N/A</u>				
2. <u>    </u>				
3. <u>    </u>				
4. <u>    </u>				
5. <u>    </u>				
				= Total Cover
Herb Stratum (Plot size: <u>10x10'</u> )				
1. <u>Juncus arcticus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
2. <u>Ranunculus macraei</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Agrostis alba</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
4. <u>Aster lanceolatus</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	
5. <u>Mentha arvensis</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	
6. <u>Juncus torreyi</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
7. <u>Juncus articulatus</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
8. <u>Carex cf. oregonensis</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
9. <u>Carex cf. emoryi</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
10. <u>Shedonurus proterensis</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	
				<u>77</u> = Total Cover
Woody Vine Stratum (Plot size: <u>    </u> )				
1. <u>    </u>				
2. <u>    </u>				
				= Total Cover
% Bare Ground in Herb Stratum <u>23</u>				= Total Cover
Remarks: <u>in wetland A. Close to CD Bodiam Lateral &amp; irrigated lands to the south, fence line is through wetland</u>				

**Dominance Test worksheet:**

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

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

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

**Prevalence Index worksheet:**

Total % Cover of:      Multiply by:     

OBL species      x 1 =     

FACW species      x 2 =     

FAC species      x 3 =     

FACU species      x 4 =     

UPL species      x 5 =     

Column Totals:      (A)      (B)

Prevalence Index = B/A =     

**Hydrophytic Vegetation Indicators:**

     1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

     3 - Prevalence Index is ≤3.0<sup>1</sup>

     4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

     Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No

**SOIL**

Hogan Parcort 8/22/16

Sampling Point: 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR2/2	100	7.5YR4/4	3	C	M/PL	sel	
5-8	10YR3/2	100	7.5YR4/4	3	C	M/PL	gel sel	
8-12	10YR3/2	100	7.5YR4/4	5	C	M/PL	gel sel	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	(LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks: *next to fence line on south end.*

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	(where tilled)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
(where not tilled)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_ (includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: BCC State: CO Sampling Point: P. # 3  
 Investigator(s): Houston + Buscher Section, Township, Range: Sec. 4 T1 N R 70W  
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): concave Slope (%): —  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: NH-Niwot soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No  (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>Dry August, Historically flood irrigated - North of CD Bodam Lateral Ditch, active this year. (with stagnant water - being pumped out) in WL #400</u>	

**VEGETATION – Use scientific names of plants. 1 diverted to Bodam property to south**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>N/A</u>				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>3</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
4. _____				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
= Total Cover				
<b>Sapling/Shrub Stratum (Plot size: _____)</b>				
1. <u>N/A</u>				
2. _____				
3. _____				
4. _____				
5. _____				
= Total Cover				
<b>Herb Stratum (Plot size: <u>10x10'</u>)</b>				
1. <u>Ranunculus macounii</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Carex emoryi</u>	<u>10</u>	<u>N</u>	<u>OBL</u>	
3. <u>Agrostis alba</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
4. <u>Aster lanceolatus</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	
5. <u>Eleocharis palustris</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
6. <u>Mentha arvensis</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
7. <u>Sheddanurus pratensis</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	
8. <u>Juncus patulicus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
9. _____				
10. _____				
<u>90</u> = Total Cover				
<b>Woody Vine Stratum (Plot size: _____)</b>				
1. _____				
2. _____				
= Total Cover				
<b>% Bare Ground in Herb Stratum <u>10</u></b>				
= Total Cover				

Remarks: Near CD Bodam Ditch + irrigated lands to south, North of ornamental pond vicinity

SOIL

Hogan Panrost

8/22/16

Sampling Point: 3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 2/2	100	7.5YR 4/4	5-7	C	M/PL	scl	
5-12	10YR 3/2	100	7.5YR 4/4	5-7	C	M/PL	gyl scl	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks: in swale next to south fence line

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		
<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<b>(where not tilled)</b>	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes  No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: BCC State: CO Sampling Point: P1+4  
 Investigator(s): Holston & Buscher Section, Township, Range: Sec. 4 T1N R70W  
 Landform (hillslope, terrace, etc.): swale Local relief (concave), convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Nh - NWOT Soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No  (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No _____			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No _____			

Remarks:  
low area along swale draining to north - historically Flood Irrigated pasture - dry July/Aug. w/ below avg. precip

**VEGETATION – Use scientific names of plants. (Terminated in 2008)**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>N/A</u>				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-):	<u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____				<b>Prevalence Index worksheet:</b>	
_____ = Total Cover				Total % Cover of:	Multiply by:
_____ = Total Cover				OBL species _____	x 1 = _____
_____ = Total Cover				FACW species _____	x 2 = _____
_____ = Total Cover				FAC species _____	x 3 = _____
_____ = Total Cover				FACU species _____	x 4 = _____
_____ = Total Cover				UPL species _____	x 5 = _____
_____ = Total Cover				Column Totals: _____ (A)	_____ (B)
_____ = Total Cover				Prevalence Index = B/A = _____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b>	
_____ = Total Cover				<input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation	
_____ = Total Cover				_____ 2 - Dominance Test is >50%	
_____ = Total Cover				_____ 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
_____ = Total Cover				_____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
_____ = Total Cover				_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
_____ = Total Cover				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b>	
_____ = Total Cover				Yes <input checked="" type="checkbox"/>	No _____

Remarks:  
Depression likely contained pooled water - Down gradient of wetland C & North of Pond + CD Bogam

SOIL *Hogan Parcort 8/22/16*

Sampling Point: 4

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

Depth (inches)	Matrix		Redox Features			Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0-2	10YR2/1	100	7.5YR4/4	3	C	M/PL	5CL	
2-10	10YR2/2	100	7.5YR4/4	5	C	M/PL	9L5CL	
10-11	10YR3/2	100	7.5YR4/4	5	C	M/PL	9L5CL	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks: *In swale*

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<b>(where not tilled)</b>	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan - Podcast City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: BCC State: CO Sampling Point: P1+5  
 Investigator(s): Houston & Buscher Section, Township, Range: Sec-4 T1N R70W  
 Landform (hillslope, terrace, etc.): depression/swale Local relief (concave) convex, none: concave Slope (%):       
 Subregion (LRR): G Lat:      Long:      Datum:       
 Soil Map Unit Name: Nh-Niwot Soils NWI classification:     

Are climatic / hydrologic conditions on the site typical for this time of year? Yes      No X (If no, explain in Remarks.)  
 Are Vegetation X, Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes      No X  
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u>    </u>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u> No <u>    </u>		
Wetland Hydrology Present?	Yes <u>X</u> No <u>    </u>		

Remarks: Heavily grazed + Hay has been dumped here – in Wetland C – North of CD sodam lateral + ornamental pond

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>    </u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80%</u> (A/B)
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>    </u> = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>    </u> Multiply by: OBL species <u>    </u> x 1 = <u>    </u> FACW species <u>    </u> x 2 = <u>    </u> FAC species <u>    </u> x 3 = <u>    </u> FACU species <u>    </u> x 4 = <u>    </u> UPL species <u>    </u> x 5 = <u>    </u> Column Totals: <u>    </u> (A) <u>    </u> (B) Prevalence Index = B/A = <u>    </u>
Sapling/Shrub Stratum (Plot size: <u>    </u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>    </u> = Total Cover				
Herb Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>    </u> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <u>    </u> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <u>    </u> <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Amaranthus blitoides</u>	<u>2</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Trifolium cristatum</u>	<u>2</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Plantago lanceolata</u>	<u>2</u>	<u>Y</u>	<u>FAC</u>	
4. <u>Trifolium pratense</u>	<u>2</u>	<u>Y</u>	<u>FACU</u>	
5. <u>Carex cf. praegracilis</u>	<u>2</u>	<u>Y</u>	<u>FACW</u>	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>10</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>    </u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>    </u> = Total Cover				
% Bare Ground in Herb Stratum <u>90</u>	<u>    </u> = Total Cover			

Remarks: very low veg cover – heavily grazed area

SOIL

Hogan Parc east 8/22/16

Sampling Point: 5

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR2/2	100	7.5YR4/4	2-3	C	M/PL	SCL	
6-11	10YR2/2	100	7.5YR4/4	15	C	M/PL	gcl SCL	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks: In swale, hay placed in pit area possibly last winter - little veg

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		
<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<b>(where not tilled)</b>	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes  No \_\_\_\_\_

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: JRCC State: CO Sampling Point: Pit 6  
 Investigator(s): Houston + Buscher Section, Township, Range: Sec 4 T1N R70W  
 Landform (hillslope, terrace, etc.): fill higher area Local relief (concave, convex, none): Slope (%):  
 Subregion (LRR): G Lat: Long: Datum:  
 Soil Map Unit Name: Nh - Nixot soils NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_ No X (If no, explain in Remarks.) Dry  
 Are Vegetation \_\_\_\_, Soil \_\_\_\_, or Hydrology \_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_  
 Are Vegetation \_\_\_\_, Soil \_\_\_\_, or Hydrology \_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ___ No <u>X</u> Hydric Soil Present? Yes ___ No <u>X</u> Wetland Hydrology Present? Yes ___ No <u>X</u>	Is the Sampled Area within a Wetland? Yes ___ No <u>X</u>
Remarks: <p align="center"><u>higher area near fence between wetlands near CD Bodam but between overflow areas</u></p>	

**VEGETATION – Use scientific names of plants. once used for irrigation**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
_____ = Total Cover				
<b>Herb Stratum (Plot size: <u>10x10'</u>)</b>				
1. <u>Ranunculus macounii</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Sheddenia pratensis</u>	<u>40</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Pitheum prohanse</u>	<u>2</u>	<u>N</u>	<u>FACU</u>	
4. <u>Agrostis alba</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
5. <u>Cnicus in julyhus</u>	<u>2</u>	<u>N</u>	<u>FACU</u>	
6. <u>Plantago major</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>89</u> = Total Cover				
<b>Woody Vine Stratum (Plot size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
<b>% Bare Ground in Herb Stratum <u>11</u></b>				
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes ___ No <u>X</u>				
Remarks:				

SOIL Hogan Pan coast 8/22/16 Sampling Point: 6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR2/2	100	—	—	—	—	SLL	
3-6	10YR2/2	100	7.5YR4/4	1	C	M/PL	SLL	
6-10	10YR3/2	100	7.5YR4/4	1-2	C	M/PL	V. g. SLL	
10-12	10YR3/2	100	7.5YR4/4	3	C	M/PL	W. g. SLL	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks: \_\_\_\_\_

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<b>(where not tilled)</b>	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present? Yes \_\_\_\_\_ No

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

Remarks: \_\_\_\_\_

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: J BCC State: CO Sampling Point: P147  
 Investigator(s): Houston + Buscher Section, Township, Range: Sec 4 T1N R70W  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): (none) Slope (%): \_\_\_\_\_  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Nh-N.WOT soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks.) DRY  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>Historic Flood irrigated pasture - outside wetland C (terminated in 2008).</u>	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>N/A</u>				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>N/A</u>				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Carex cf. emeryi</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Juncus balticus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
3. <u>Schrodurus pratensis</u>	<u>15</u>	<u>N</u>	<u>FACU</u>	
4. <u>Festuca rubra</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
5. <u>Plantago lanceolata</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
6. <u>Agrostis alba</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
7. <u>Lotus corniculatus</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
8. _____				
9. _____				
10. _____				
<u>90</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>10</u> _____ = Total Cover				

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): \_\_\_\_\_ (A)  
 Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

**Prevalence Index worksheet:**  
 Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_  
 OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_  
 FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_  
 FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_  
 FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_  
 UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_  
 Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)  
 Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
 1 - Rapid Test for Hydrophytic Vegetation  
 2 - Dominance Test is >50%  
 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____
---

Remarks: North of wetland C

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 2/2	100	-	-	-	-	SCL	
4-6	10YR 2/2	100	7.5YR 4/4	5	C	MPL	SCL	
6-12	10YR 3/2	100	7.5YR 4/4	1	C	M	U gel SL	

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No

Remarks: Pit is not in a depression so does not meet FB indicator.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<b>(where not tilled)</b>	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present?	Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes _____ No <input checked="" type="checkbox"/>
Water Table Present?	Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: BCC State: CO Sampling Point: P178  
 Investigator(s): Houston & Buscher Section, Township, Range: Sec. 4 T1N R27W  
 Landform (hillslope, terrace, etc.): near ditch Local relief (concave, convex, none): (none) Slope (%): —  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Mh-Niwot Soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No  (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Historically irrigated pasture North of CD Bodam Ditch near small overflow ditch that is no longer used	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Fraxinus pennsylvanica</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				
Herb Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Panicum maritimi</u>	<u>45</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Carex cf. emeryi</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
3. <u>Agrostis alba</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>	
4. <u>Quaxarum officinale</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>80</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
% Bare Ground in Herb Stratum <u>20</u>				

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): \_\_\_\_\_ (A)  
 Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

**Prevalence Index worksheet:**  
 Total % Cover of: \_\_\_\_\_ Multiply by:  
 OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_  
 FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_  
 FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_  
 FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_  
 UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_  
 Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)  
 Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
 1 - Rapid Test for Hydrophytic Vegetation  
 \_\_\_\_\_ 2 - Dominance Test is >50%  
 \_\_\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Remarks:

SOIL *Hogan Parcort 8/22/16*

Sampling Point: 8

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR2/2	100					SCL	
3-6	10YR2/2	100	7.5YR4/4	2-3	D	M/PL	SCL	
6-12	10YR4/4	100	7.5YR4/4	1-3	C	M/PL	U. g. d SL	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks: *Not enough redox features to meet F6,*

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<b>(where not tilled)</b>	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	
<b>Field Observations:</b>	<b>Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/></b>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: BCC State: CO Sampling Point: P179  
 Investigator(s): Houston & Buscher Section, Township, Range: Sec-4 T1N R70W  
 Landform (hillslope, terrace, etc.): near ditch Local relief (concave, convex, none): (none) Slope (%): \_\_\_\_\_  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: NH - MINOT SOILS NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks.) Dry  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: <u>By irrigation over flow from CD BODIAM - NO longer used to irrigate the west Parcel -</u>			

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Elaeagnus angustifolia</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>5</u> = Total Cover				
<b>Sapling/Shrub Stratum (Plot size: <u>10x10'</u>)</b>				
1. <u>Fraxinus pennsylvanica</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>5</u> = Total Cover				
<b>Herb Stratum (Plot size: <u>10x10'</u>)</b>				
1. <u>Ranunculus macranthus</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Aster lanceolatus</u>	<u>15</u>	<u>N</u>	<u>FACW</u>	
3. <u>Carex fl. emeryi</u>	<u>10</u>	<u>N</u>	<u>OBSL</u>	
4. <u>Agrostis alba</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>	
5. <u>Poa pratensis</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
6. <u>Carex nebrascensis</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>85</u> = Total Cover				
<b>Woody Vine Stratum (Plot size: _____)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>15</u> _____ = Total Cover				
<b>Hydrophytic Vegetation Indicators:</b> 1 - Rapid Test for Hydrophytic Vegetation _____ <u>X</u> 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) _____ <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____				
Remarks: _____				

SOIL

Hogan Pancost 8/22/16

Sampling Point: 9

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR2/2	100	—	—	—	—	SL	
3-7	10YR 2/2	100	7.5YR4/4	1-3	C	MPL	SL	
7-11	10YR 2/2	100	7.5YR 4/4	1-3	C	MPL	1/2 gpl SL	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks: *Dug pit in nearby swale, was hydric (in WL # 800 - not described) check hole in wetland*

**HYDROLOGY**

Wetland Hydrology Indicators:	Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Water-Stained Leaves (B9)		

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_ (includes capillary fringe)

Wetland Hydrology Present? Yes \_\_\_\_\_ No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: BCC State: CO Sampling Point: Pit 10  
 Investigator(s): Houston & Buscher Section, Township, Range: Sec 4 T1N R70W  
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: NM - Nitrot Soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No  (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____		

Remarks:  
Swale - SW corner of west parcel in corner by CD Bodam & Dry Creek Ditch #2  
WL #1000 = I

**VEGETATION – Use scientific names of plants.** low area - gets see page 4 over flow

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>10x10'</u> )	1. <u>Ranunculus marocini</u>	<u>50</u>	<u>Y</u> <u>OBL</u>	
2. <u>Plantago lanceolata</u>	<u>2</u>	<u>N</u> <u>FAC</u>		
3. <u>Lotus corniculatus</u>	<u>5</u>	<u>N</u> <u>FACU</u>		
4. <u>Plantago major</u>	<u>2</u>	<u>N</u> <u>FAC</u>		
5. <u>Daucus carota</u>	<u>2</u>	<u>N</u> <u>UPL</u>		
6. <u>Schedonurus pratensis</u>	<u>10</u>	<u>N</u> <u>FACU</u>		
7. <u>Aster hesperius</u>	<u>5</u>	<u>N</u> <u>FACW</u>		
8. <u>Agrostis alba</u>	<u>20</u>	<u>Y</u> <u>FACW</u>		
9. <u>Rumex crispus</u>	<u>2</u>	<u>N</u> <u>FAC</u>		
10. _____	_____	_____	_____	
<u>96</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	1. _____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>4</u>	_____ = Total Cover			

Remarks:  
Near divergence point in CD Bodam to the Bodam property to the south = overflows if present  
would flow into this swale

SOIL

Hogan Parc

8/22/16

Sampling Point: 10

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR2/2	100	—	—	—	—	SCL	
3-12	10YR2/2	100	7.5YR4/4	5	C	M/PL	SCL	

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

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5) (LRR F)</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)</p>	<p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input checked="" type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> High Plains Depressions (F16)</p> <p>(MLRA 72 &amp; 73 of LRR H)</p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)</p> <p><input type="checkbox"/> Dark Surface (S7) (LRR G)</p> <p><input type="checkbox"/> High Plains Depressions (F16)</p> <p>(LRR H outside of MLRA 72 &amp; 73)</p> <p><input type="checkbox"/> Reduced Vertic (F18)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p><sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<p><u>Primary Indicators (minimum of one required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p>	<p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)</p>
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**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes  No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: BCC State: CO Sampling Point: P: 11  
 Investigator(s): Houston + Buscher Section, Township, Range: Sec 4 T1N R70W  
 Landform (hillslope, terrace, etc.): next to swale Local relief (concave, convex, none): convex Slope (%): —  
 Subregion (LRR): 6 Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: UN - Niwot soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>just outside WL boundary on mounded area next to swale w/ WL# 1000(I) by #1014-1015 - in pasture</u>	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot size: _____)</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
<b>Herb Stratum (Plot size: <u>10x10'</u>)</b> 1. <u>Asterias speciosa</u> 30 Y FAC 2. <u>Agrostis alba</u> 20 Y FACW 3. <u>Carex emoryi</u> 15 N OBL 4. <u>Galium macrophyllum</u> 2 N FACW 5. <u>Ranunculus macranthi</u> 15 N OBL 6. <u>Juncus cf. torreyi</u> 5 N FACW 7. <u>Aster lanceolatus</u> 5 N FACW 8. _____ 9. _____ 10. _____ _____ = Total Cover				
<b>Woody Vine Stratum (Plot size: _____)</b> 1. _____ 2. _____ _____ = Total Cover				
<b>% Bare Ground in Herb Stratum</b> <u>8</u> _____ = Total Cover				

Remarks:

SOIL Hogan Parcort 8/22/16 Sampling Point: 11

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
<u>0-9</u>	<u>10YR2/2</u>	<u>100</u>					<u>SCL</u>	
<u>9-12</u>	<u>10YR2/2</u>	<u>100</u>	<u>7.5YR4/4</u>	<u>5</u>	<u>C</u>	<u>M/PL</u>	<u>gcl scl</u>	

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> (MLRA 72 & 73 of LRR H)	

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks: Redox features too deep to meet F6.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> (where tilled)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_ (includes capillary fringe)

Wetland Hydrology Present? Yes \_\_\_\_\_ No

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

Remarks: On small hill slope just above wetland boundary, < 1' - C3

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: JCC State: CO Sampling Point: P112  
 Investigator(s): Houston + Buscher Section, Township, Range: Sec 4 T1N R70W  
 Landform (hillslope, terrace, etc.): next to swale Local relief (concave, convex, none) Slope (%): \_\_\_\_\_  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Nh-Niwot soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>next to swale on higher area - Historically flood irrigated + close to earthen ditch</u>	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Rosa woodsii</u>	<u>15</u>	<u>Y</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				
Herb Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Bromus inermis</u>	<u>20</u>	<u>Y</u>	<u>NL</u>	
2. <u>Ambrosia psilostachya</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Aster cf. ericoides</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>30</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
% Bare Ground in Herb Stratum <u>70</u>				

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): \_\_\_\_\_ (A)  
 Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

**Prevalence Index worksheet:**  
 Total % Cover of: \_\_\_\_\_ Multiply by:  
 OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_  
 FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_  
 FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_  
 FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_  
 UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_  
 Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)  
 Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
 \_\_\_ 1 - Rapid Test for Hydrophytic Vegetation  
 \_\_\_ 2 - Dominance Test is >50%  
 \_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
---

Remarks: low veg cover here.

SOIL

Hogan Pancoast 8/22/16

Sampling Point: 12

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	10YR4/2	100	—	—	—	—	SCL	
8-12	10YR4/2	100	—	—	—	—	U. Cbl SL	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR F) <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) <input type="checkbox"/> Dark Surface (S7) (LRR G) <input type="checkbox"/> High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>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

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pasture City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: BCC State: CO Sampling Point: Pit 13  
 Investigator(s): Houston + Buscher Section, Township, Range: Sec 4 T1N R70W  
 Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): —  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: NH-Niwot soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: <u>WL 1200 - (J) swale in irrigated pasture</u>	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Carex nebrascensis</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>	<input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
2. <u>Ranunculus macounii</u>	<u>50</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Festuca rubra</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
4. <u>Agrostis alba</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>90</u> = Total Cover				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum <u>10</u> = Total Cover				
Remarks: _____				

SOIL Hogan Pancost 8/22/16 Sampling Point: 13

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-1	10YR 2/1	100					SCL	
1-10	10YR 2/1	100	7.5YR 4/4	7	C	M/PL	SCL	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR F) <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) <input type="checkbox"/> Dark Surface (S7) (LRR G) <input type="checkbox"/> High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) <sup>3</sup> 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

Remarks:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		
<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes  No

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

Remarks: In swale

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: BCC State: CO Sampling Point: Pit 14  
 Investigator(s): HOUSTON & BUSCHER Section, Township, Range: Sec 4 T1N R70W  
 Landform (hillslope, terrace, etc.): Small hill- Local relief (concave, convex, none): convex Slope (%):           
 Subregion (LRR): G Lat:          Long:          Datum:           
 Soil Map Unit Name: MH-N1WOT SOILS NWI classification:         

Are climatic / hydrologic conditions on the site typical for this time of year? Yes          No X (If no, explain in Remarks.) Dry  
 Are Vegetation         , Soil         , or Hydrology          significantly disturbed? Are "Normal Circumstances" present? Yes X No           
 Are Vegetation         , Soil         , or Hydrology          naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>        </u> Hydric Soil Present? Yes <u>        </u> No <u>X</u> Wetland Hydrology Present? Yes <u>        </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u>        </u> No <u>X</u>
Remarks: <u>outside WL # 1200 - on higher area next to swale (J)</u>	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>        </u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
2. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
3. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
4. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
				= Total Cover
Sapling/Shrub Stratum (Plot size: <u>        </u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
2. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
3. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
4. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
5. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
				= Total Cover
Herb Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Plantago lanceolata</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Ranunculus macranthi</u>	<u>5</u>	<u>N</u>	<u>OBSL</u>	
3. <u>Dipsacus fullonum</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
4. <u>Carex cf. praegracilis</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
5. <u>Coryza canadensis</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
6. <u>Verbasicum thapsus</u>	<u>2</u>	<u>N</u>	<u>UPL</u>	
7. <u>Juncus balticus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
8. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
9. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
10. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
				<u>47</u> = Total Cover
Woody Vine Stratum (Plot size: <u>        </u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
2. <u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	
				= Total Cover
% Bare Ground in Herb Stratum <u>53</u>				= Total Cover

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC (excluding 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 =           
 FACW species          x 2 =           
 FAC species          x 3 =           
 FACU species          x 4 =           
 UPL species          x 5 =           
 Column Totals:          (A)          (B)  
 Prevalence Index = B/A =         

**Hydrophytic Vegetation Indicators:**  
         1 - Rapid Test for Hydrophytic Vegetation  
         2 - Dominance Test is >50%  
         3 - Prevalence Index is ≤3.0<sup>1</sup>  
         4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
         Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes <u>        </u> No <u>X</u>
---

Remarks: Low veg cover here

SOIL

Hogan Pancoast

8/22/16

Sampling Point: 14

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR2/2	100	—	—	—	—	SCL	
5-10	10YR 5/2	100	7.5YR 4/4	3	C	M/PL	SCL	
10-12	10YR2/2	100	7.5YR 4/4	5	C	M/PL	SL	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks: *Not enough redox features and/or too deep to meet F6.*

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <b>(where not tilled)</b>	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	
<b>Field Observations:</b>	<b>Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/></b>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	

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

Remarks: *On upper back slope of small hill.*

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: JBCC State: CO Sampling Point: Pit 15  
 Investigator(s): Houston & Buscher Section, Township, Range: Sec 4 T1N R70W  
 Landform (hillslope, terrace, etc.): next to swale Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Nh-N.10T soils NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks.) Dry  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>Near old Pit 3 - western part of west parcel just outside wetland K</u>	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Elaeagnus angustifolia</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>5</u> = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>2</u> x 2 = <u>4</u> FAC species <u>2</u> x 3 = <u>6</u> FACU species <u>75</u> x 4 = <u>300</u> UPL species <u>5</u> x 5 = <u>25</u> Column Totals: <u>84</u> (A) <u>335</u> (B) Prevalence Index = B/A = <u>3.98</u>
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Rosa woodsii</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>5</u> = Total Cover				
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Cichorium intybus</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Dactylis glomerata</u>	<u>15</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Bromus inermis</u>	<u>5</u>	<u>N</u>	<u>NL</u>	
4. <u>Elytrigia repens</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	
5. <u>Ambrosia psilostachya</u>	<u>2</u>	<u>N</u>	<u>FAC</u>	
6. <u>Juncus balticus</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	
7. <u>Lotus corniculatus</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	
8. <u>Aster ericoides</u>	<u>5</u>	<u>N</u>	<u>NL</u>	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>79</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>21</u> _____ = Total Cover				
Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				

50 =  
39.5  
20 =  
15.9

Remarks:  
Vegetation is shifting since this area is no longer irrigated & is heavily grazed

SOIL

Hogan Parcort 8/22/14

Sampling Point: 15

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	10YR 2/2	100					Loam	
2-7	10YR 2/2	100	7.5YR 4/4	7	C	M/PL	Loam	
7-10	10YR 3/2	100					U. cl SL	

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

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

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

Indicators for Problematic Hydric Soils<sup>3</sup>:

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

<sup>3</sup>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

Remarks:

edge of swale, Hydricity → ponding

in part could be from irrigation

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes \_\_\_ No \_\_\_ Depth (inches): \_\_\_\_\_  
Water Table Present? Yes \_\_\_ No \_\_\_ Depth (inches): \_\_\_\_\_  
Saturation Present? Yes \_\_\_ No \_\_\_ Depth (inches): \_\_\_\_\_ (includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pankost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: BCC State: CO Sampling Point: Pit 16  
 Investigator(s): Houston & Buscher Section, Township, Range: Sec 3 T1 N R 70W  
 Landform (hillslope, terrace, etc.): Low area by ditch Local relief (concave, convex, none): (none) Slope (%): —  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: NH - Niwot Soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks.) Drt  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
---	---

Remarks: East Parcel - near low area by ditch  
This parcel is actively flood irrigated

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
				_____ = Total Cover
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
				_____ = Total Cover
Herb Stratum (Plot size: <u>10x10'</u> )				
1. <u>Agrostis alba</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Dioscorea filiformis</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
3. <u>Juncus balticus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
4. <u>Schandurus pratensis</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	
5. <u>Carex emoryi</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>	
6. <u>Lotus corniculatus</u>	<u>2</u>	<u>N</u>	<u>FACU</u>	
7. <u>Phleum pratense</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
				<u>87</u> = Total Cover
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
				_____ = Total Cover
% Bare Ground in Herb Stratum <u>13</u>	_____ = Total Cover			

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): \_\_\_\_\_ (A)  
 Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

**Prevalence Index worksheet:**  
 Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_  
 OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_  
 FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_  
 FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_  
 FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_  
 UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_  
 Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)  
 Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
 1 - Rapid Test for Hydrophytic Vegetation  
 \_\_\_\_\_ 2 - Dominance Test is >50%  
 \_\_\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____
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Remarks: \_\_\_\_\_

SOIL

Hogan Pancost 8/22/16

Sampling Point: 16

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR2/2	100	—	—	—	—	scl	
5-9	10YR3/2	100	7.5YR4/4	1	C	M/K	gcl scl	
9-11	10YR 3/3	100	—	—	—	—	gcl scl	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks: East parcel

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>		
<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<b>(where not tilled)</b>	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present? Yes \_\_\_\_\_ No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Parcels City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: J BCC State: CO Sampling Point: P.T 17  
 Investigator(s): Houston & Bisher Section, Township, Range: SEC 5 T12R 70W  
 Landform (hillslope, terrace, etc.): low area by ditch Local relief (concave, convex, none): (none) Slope (%): —  
 Subregion (LRR): G Lat: — Long: — Datum: —  
 Soil Map Unit Name: Nh - Niwot Soils NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes — No X (If no, explain in Remarks.) DEY  
 Are Vegetation —, Soil —, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes — No X  
 Are Vegetation —, Soil —, or Hydrology — naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>—</u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u>—</u>
Hydric Soil Present?	Yes <u>X</u>	No <u>—</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>—</u>	
Remarks: <u>East Parcel is actively flooded in general &amp; this low area by ditch gets seepage.</u>			

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>10x10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex emoryi</u>	<u>60</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Barbarea orthoceras</u>	<u>2</u>	<u>N</u>	<u>OBL</u>	
3. <u>Ranunculus macounii</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
4. <u>Epilobium ciliatum</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	
5. <u>Carex cf. praeparacilis</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	
6. <u>Agrostis alba</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
7. <u>Lactuca scariola</u>	<u>2</u>	<u>N</u>	<u>FAC</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
<u>93</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>—</u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>7</u> _____ = Total Cover				
Remarks: _____				

SOIL Hogan Parc 8/22/16 Sampling Point: 17

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR2/2	100					SCL	
6-10	10YR3/2	100	7.5YR4/4	7	C M/PL		v. gnl scl	very hard

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	(LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks: East parcel, near Pit 16.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		
<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	(where tilled)
<input type="checkbox"/> Drift Deposits (B3)	(where not tilled)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Hogan Pancost City/County: Boulder Sampling Date: 8/22/16  
 Applicant/Owner: J BCC State: CO Sampling Point: P: + 18  
 Investigator(s): Houston + Buscher Section, Township, Range: Sec 4 T14N R70W  
 Landform (hillslope, terrace, etc.): pasture Local relief (concave, convex, none): none Slope (%): —  
 Subregion (LRR): G Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Nh-Niwot Soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks.) Dry  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: <u>Actively Flood irrigated East Parcel</u>			

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>10x10'</u> )				
1. <u>Carex cf. emoryi</u>	<u>50</u>	<u>Y</u>	<u>OBSL</u>	
2. <u>Lactuca serrida</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
3. <u>Fallopia convolvulus</u>	<u>2</u>	<u>N</u>	<u>FACU</u>	
4. <u>Carex megaracensis</u>	<u>20</u>	<u>Y</u>	<u>OBSL</u>	
5. <u>Agrostis alba</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>92</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>8</u>	_____ = Total Cover			
Remarks:				

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): \_\_\_\_\_ (A)  
 Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

**Prevalence Index worksheet:**  
 Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_  
 OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_  
 FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_  
 FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_  
 FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_  
 UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_  
 Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)  
 Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
 1 - Rapid Test for Hydrophytic Vegetation  
 \_\_\_ 2 - Dominance Test is >50%  
 \_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

SOIL Hogan Pan cost 8/22/16 Sampling Point: 18

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-7	10YR2/2	100					SEL	
7-13	10YR3/2	100	7.5YR4/4	1	C	M	gcl sel	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR F) <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)
	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) <input type="checkbox"/> Dark Surface (S7) (LRR G) <input type="checkbox"/> High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_  
 Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks: East parcel, west side.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

**Field Observations:**  
 Surface Water Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)  
 Wetland Hydrology Present? Yes \_\_\_\_\_ No

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

Remarks: