MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2013

Dodson East
Phillips County, Montana



Prepared for:

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December 2013

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Control Number: 1516

USACE: NWO-2004-90-518

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CCI Project No: MDT.006

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1. INTRODUCTION

The Dodson East 2013 Wetland Mitigation Monitoring Report presents the results of the third year of post-construction monitoring at the Dodson East Wetland Mitigation Site. This Montana Department of Transportation (MDT) wetland mitigation project is located in Sections 1 and 2, Township 30 North, Range 27 East, Phillips County, Montana, approximately four miles east of Dodson on US Highway 2 (Figure 1). The Dodson East wetland mitigation area encompasses 14.92 fenced acres within MDT-owned property and is situated north of the Milk River and Highway 2 and south of the adjacent railroad grade.

The wetland mitigation site is located within the Milk River Basin Watershed 11. Wetlands developed at this location were designed to provide compensatory mitigation for approximately 4.4 acres of wetland impacts associated with the planned reconstruction of 4.4 miles of US Highway 2 east of Dodson.

Two cells were constructed in 2008 to create at least 4.92 acres of shallow water, palustrine emergent, and aquatic bed wetland types. The bases of the wetland cells were constructed with an undulating bottom below the plan elevation. The final elevation of at least 75 percent of the cell area was to be at or below the plan elevation after the placement of salvaged wetland materials and topsoil (USACE Permit No. 2004-90-518 dated July 22, 2004).

The performance standards listed in the USACE Permit specified that the mitigation wetlands were to have at least 60 percent cover by desirable wetland species in the herbaceous layer after 3 years and 75 percent cover after five years. Invasive and noxious species were to comprise no more than 10 percent of the relative cover, and to not dominate the vegetation in any extensive area of the mitigation wetland. The wetland was to be inundated or saturated to the surface continuously for at least 12.5 percent of the growing season in most years. Mitigation construction was to be initiated prior to or concurrent with impacts.

Figure 2 and Figure 3 in Appendix A show the 2013 Monitoring Activity Locations and 2013 Mapped Site Features, respectively. The MDT Mitigation Monitoring Form, US Army Corps of Engineers (USACE) Wetland Determination Data Forms – Great Plains Region (USACE 2010), and the 2008 MDT Montana Wetland Assessment Method (MWAM) Form (Berglund and McEldowney 2008) are included in Appendix B. Project area photographs are included in Appendix C.

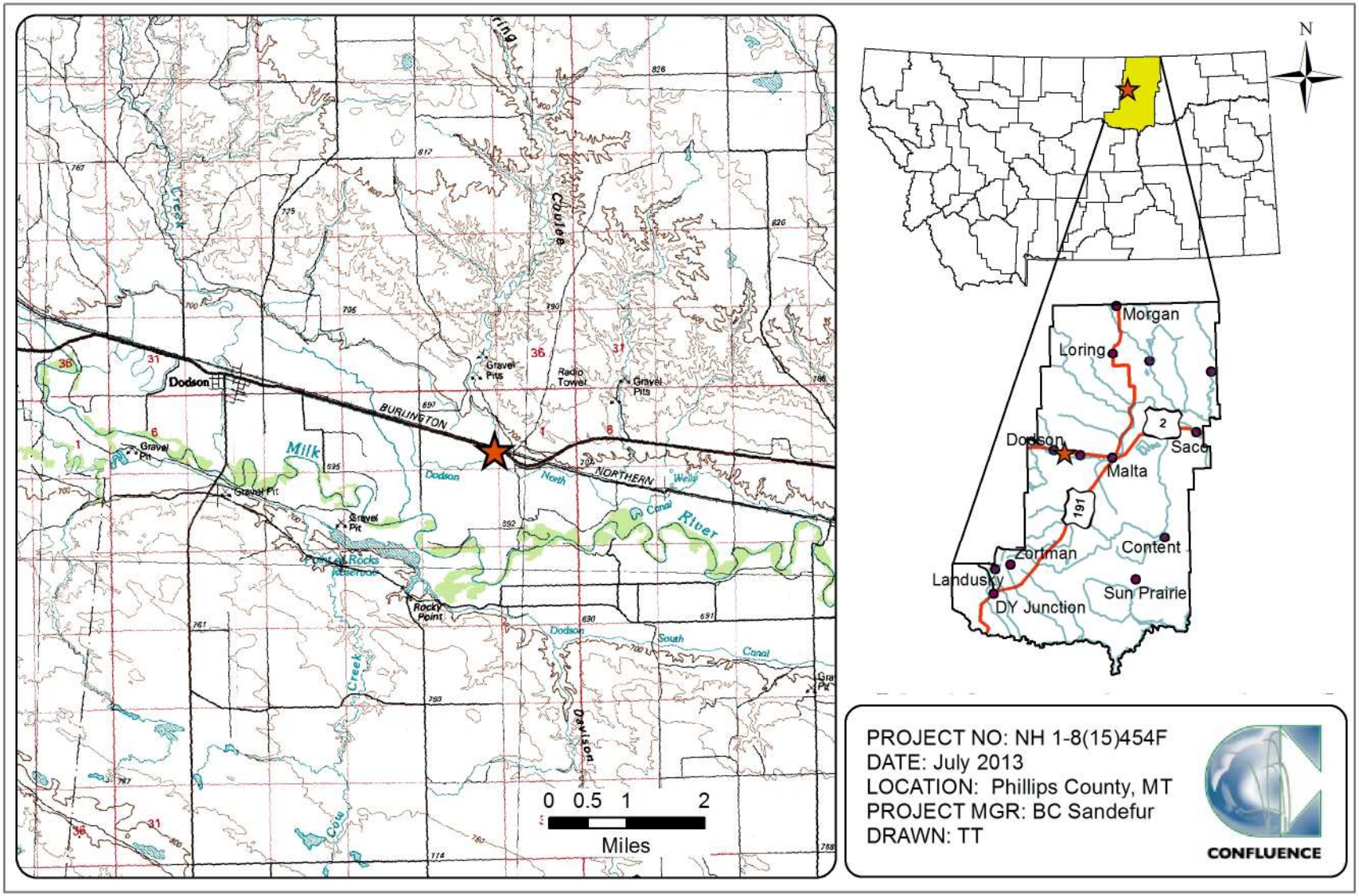


Figure 1. Project location of Dodson East Wetland Mitigation Site.

2. METHODS

The third annual monitoring event at Dodson East was completed on August 9, 2013. Information for the Mitigation Monitoring Form and Wetland Determination Data Form was entered electronically in the field on a palmtop computer during the field investigation (Appendix B). Monitoring activity sites were located with a global positioning system (GPS) as shown on Figure 2 (Appendix A). Information collected included a wetland delineation, vegetation community mapping, vegetation transect monitoring, soil and hydrology data, bird and wildlife use documentation, photographic documentation, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

The presence of hydrologic indicators as outlined on the Wetland Determination Data Form was assessed at two data points established within the project area. The hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on the electronic Wetland Determination Data Forms (Appendix B). There were no wells installed at this site. Onsite hydrologic assessments allowed the evaluation of mitigation criteria addressing inundation and saturation requirements.

Technical criteria for wetland hydrology guidelines have been established as "permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (12.5 percent of the growing season) during the growing season" (USACE 2010). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are classified as exhibiting wetland hydrology. The growing season is defined for purposes of this report as the number of days where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit (USACE 2010). The growing season recorded for the meteorological station at Dodson, Montana (242438), is approximately 121 days. Areas defined as wetlands would require at least 15 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria.

Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data were recorded on the Wetland Determination Data Form (Appendix B).

2.2. Vegetation

The boundaries of dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2012 (the site was not flown in 2013) aerial photograph (Figure 3, Appendix A). The percent cover of dominant species within a community type was estimated and recorded using the following categories: 0 (less than 1 percent), 1 (1 to 5 percent), 2 (6 to 10 percent), 3 (11 to 20 percent), 4 (21 to 50 percent), and 5 (greater than 50 percent) (MM Form, Appendix B).

Temporal changes in vegetation were evaluated through annual assessments of static belt transects established in August 2011 (Figure 2, Appendix A).

Vegetation composition was assessed and recorded along two vegetation belt transects (T-1 and T-2) approximately 10 feet wide and 244 and 207 feet long, respectively (Figure 2, Appendix A).

The transect locations were recorded with a resource-grade GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent aerial cover of each vegetation species within the belt transect was estimated using the same values and cover ranges as each species cover recorded within community. (Figure 3, Appendix B). Photographs were taken at the endpoints of each transect during the monitoring event (Appendix C).

The Montana State Noxious Weed List (September 2010), prepared by the Montana Department of Agriculture, was used to categorize weeds identified within the site. The location of noxious weeds was noted in the field and mapped and color-coded by species on the aerial photo (Figure 3, Appendix A). The locations were denoted with the symbol "**x**", "▲", or "■" representing 0 to 0.1 acre, 0.1 to 1 acre, or greater than 1.0 acre in extent, respectively. Cover classes were represented by T, L, M, or H, for less than 1 percent, 1 to 5 percent, 6 to 25 percent, and 26 to 100 percent, respectively.

2.3. Soil

Soil information was obtained via the *Soil Survey for Phillips County Area* (USDA 2010) and *in situ* soil descriptions. Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the 1987 Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and 2010 Regional Supplement. A description of the soil profile, including hydric soil indicators when present, was recorded on the Wetland Determination Data Form for each profile (Appendix B).

2.4. Wetland Delineation

Waters of the U.S. including special aquatic sites and jurisdictional wetlands were delineated throughout the project area in accordance with criteria established in the 2010 Great Plains Regional Supplement to the 1987 Manual. The technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology must be satisfied to delineate a representative area as jurisdictional. The name and indicator status of plant species was derived from the Draft 2012 National Wetland Plant List (NWPL) (Lichvar and Kartesz. 2009). Previous years' reports used the 1988 National List of Plant Species that Occur in Wetlands: Northwest Region 4 (Reed 1988). The 2012 NWPL scientific plant names were used in this report. Many common names used in the 2012 NWPL appear incomplete or erroneous. When used in this report, 2012 NWPL common names that appear to be incomplete or erroneous are provided with parenthetical clarification. For example, the common given name for the plant *Agrostis exarata* in the 2012 NWPL is "spiked bent". As this is likely an error, this species' common name would be reported here as "spiked bent (grass)". The Routine Level-2 On-site Determination Method (Environmental Laboratory 1987) was used to delineate jurisdictional areas within the project boundaries. The

information was recorded electronically on the Wetland Determination Data Form (Appendix B).

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for the delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was classified as an atypical situation, potential problem area for vegetation, soil or hydrology, or special aquatic site, i.e., mudflat, based on the guidance in the 2010 Regional Supplement. The wetland boundary was GPS-surveyed in the field and presented on the 2013 aerial photo. Wetland areas reported were estimated using Geographic Information System (GIS) methods.

2.5. Wildlife

Observations and other positive indicators of mammal, reptile, amphibian, and bird use were recorded on the mitigation monitoring form during the site visit. Indirect use indicators including tracks, scat, burrow, eggshells, skins, and bones were also noted. These signs were recorded while traversing the site for other required activities. Direct sampling methods such as snap traps, live traps, and pitfall traps, were not used. A comprehensive wildlife species list of species observed from 2011 through 2013 was compiled for this report.

2.6. Functional Assessment

The 2008 MWAM (Berglund and McEldowney) was used to evaluate functions and values on the site from 2011 through 2013. This method provides an objective means of assigning wetlands an overall rating and provides regulators a means of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values (Berglund and McEldowney 2008). Field data for this assessment were collected during the site visit. The wetland assessment area (AA) encompassed the two constructed wetland cells and developed and pre-existing wetlands located between the cells (Appendix B).

2.7. Photo Documentation

Photo documentation at established photo points provided supplemental information on wetland and upland conditions, site trends, current land uses surrounding the site, and the vegetation transects. Photographs were taken during the site visit at seven established photo points (Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 2, Appendix A).

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2013 monitoring season. Points were collected using WAAS-enabled differential correction satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, imported into GIS, and presented in Montana State Plane Single Zone NAD 83 meters. Site features and survey points that were located with GPS included wetland/upland boundaries, fence boundaries, photographic points, transect endpoints, and wetland data points.

2.9. Maintenance Needs

There were no water control structures installed at this site. The constructed cells, perimeter fencing, and other man-made features were examined during the site visit for obvious signs of breaching, damage, or other problems. This was a cursory examination and did not constitute an engineering-level structural inspection.

3. RESULTS

3.1. Hydrology

Climate data from the meteorological station at Dodson Coop, Montana (242438), recorded average annual precipitation rates of 10.48 inches from 1951 thru 2012 (WRCC 2013). Annual precipitation in 2010, 2011, and 2012 was 15.0 inches, 15.25 inches, and 10.95 inches, respectively. Precipitation totals from January to August were 8.71 inches (long-term average), 9.92 inches (2010), 13.53 inches (2011), 10.13 inches (2012), and 15.09 inches (2013). This data indicates the region has received above average precipitation rates during the last four growing seasons.

The constructed cells cover over half the site. These cells were completely inundated during the 2013 site visit. The average surface water depth in the cells was 2.0 feet and the range of depths was 0.0 to 3.0 feet. The shoreline adjacent to the open water was saturated to the ground surface. The depth of water at the emergent vegetation and open water boundary was approximately 0.8 feet. Additional hydrological indicators observed onsite included surface soil cracks, drainage patterns, algal mats, drift and sediment deposits, FAC-neutral vegetation, and aquatic invertebrates.

The site has the potential to receive inundation from high water events from Spring Coulee, an ephemeral drainage that drains approximately 21 square miles north of the site. Surface water drainage patterns from the ephemeral creek that historically flowed between the cells were observed in 2013. A culvert under US Highway 2 provides a drainage outlet for this wetland once the area reaches full capacity to store surface water within the excavated basins.

Two data points were sampled in 2013 to determine the wetland and upland boundaries. Sample point DE-1w was located within wetland community Type 2 – *Schoenoplectus* spp. that borders the open water areas. Hydrological

indicators included two inches of surface water, a high water table, saturation to the ground surface, algal mats, salt crust, and FAC-neutral vegetation. Data point DE-1u was located along the boundary between upland community Types 1 and 3. Although this data point did not exhibit positive wetland indicators within the upper 12 inches, the groundwater elevation appears to be within a couple feet of the soil surface in this area.

3.2. Vegetation

Monitoring year 2013 marked the third year of monitoring on the Dodson East wetland mitigation site. Sixty-one plant species have been observed site wide from 2011 through 2013 (Table 1). Vegetation plant communities were mapped and named based on the dominant species within a community and the results of the wetland delineation data. The composition of each community is listed on the Mitigation Monitoring Form (Appendix B). The community boundaries are shown on Figure 3 (Appendix A).

The wetland cells were seeded with a wetland mix consisting of slender wild rye (*Elymus trachycaulus*, called *Agropyron trachycaulum* on the 1988 list), saltmarsh club-rush (*Schoenoplectus maritimus,* called *Scirpus maritimus* on the 1988 list), Western-wheatgrass (*Pascopyrum smithii,* called *Agropyron smithii* on 1988 list), Great Basin lyme grass (*Leymus cinereus*, called *Elymus cinereus* on the 1988 list), and Nuttall's alkaligrass (*Puccinellia nuttaliana*). Salvaged wetland sod and soil were also used as a seed bank to augment species diversity. No woody species were planted. Five vegetation communities, including two upland types and three wetland types, were identified in 2013 and described below.

Upland community Type 1 – *Elymus* spp. characterized the 4.85 acre upland buffer surrounding the constructed wetland cells. Crested wheatgrass (*Agropyron cristatum*), creeping wild rye (*Elymus repens*), slender wild rye, nodding wild rye (*Elymus canadensis*), smooth brome (*Bromus inermis*), Mexican fireweed (*Bassia scoparia*), curly-cup gumweed (*Grindelia squarrosa*), and field sow thistle (*Sonchus arvensis*) dominated the herbaceous cover.

Wetland community Type 2 – *Schoenoplectus* spp. (called *Scirpus* spp. in the 2011 monitoring report) was found across 2.15 acres around the perimeter of the cells. This community increased by 1.31 acre from the 2012 monitoring event as emergent vegetation continues to develop within the open water cells. The dominant species were saltmarsh club-rush, hard-stem club-rush (*Schoenoplectus acutus*), and fox-tail barley (*Hordeum jubatum*). Green algae (a protist) were observed on the water surface of the open water. Approximately 6 to 10 percent of the ground surface in the community was open water.

Upland community Type 3 – *Puccinellia nuttalliana* covered 1.74 acres across the terrace on the north side of the east cell and along the perimeter of the west and east cells. This community may transition from upland to wetland if the groundwater elevation increases enough annually to saturate the soil for a sufficient duration during the growing season. Although Nuttall's alkaligrass is a wetland plant, the soil and hydrology in the community did not meet the wetland criteria. Nuttall's alkali grass and creeping wild rye were the dominant species,

with less than five percent cover of fox-tail barley, slender wild rye, prickly lettuce (*Lactuca serriola*), black medick (*Medicago lupulina*), curly dock (*Rumex crispus*), sow thistle, Paiuteweed (*Suaeda calceoliformis*), curly-cup gumweed, yellow sweet-clover (*Melilotus officinalis*), and deer-root (*Iva axillaris*).

Table 1. Vegetation species observed in 2011, 2012 and 2013 at the Dodson East Wetland Mitigation Site.

Scientific Names	Common Names	GP Indicator Status[1]
Agropyron cristatum	Crested Wheatgrass	UPL
Algae, green	Algae, Green	NL
Alisma plantago-aquatica	European Water-Plantain	OBL
Alisma triviale	Northern Water-Plantain	OBL
Alopecurus pratensis	Field Meadow-Foxtail	FACW
Asclepias sp.	Milkweed	NL
Asclepias speciosa	Showy Milkweed	FAC
Avena fatua	Wild Oat	UPL
Axyris amaranthoides	Russian Pigweed	NL
Bassia scoparia	Mexican-Fireweed	FACU
Bouteloua dactyloides	Buffalo Grass	FACU
Bouteloua gracilis	Blue Grama	NL
Bromus inermis	Smooth Brome	FAC
Carex praegracilis	Clustered Field Sedge	FACW
Carex stipata	**Stalk-Grain Sedge**	**OBL**
Carex vulpinoidea	Common Fox Sedge	FACW
Chenopodium album	Lamb's-Quarters	FACU
Distichlis spicata	Coastal Salt Grass	FACW
Elaeagnus angustifolia	Russian-Olive	FACU
Eleocharis palustris	Common Spike-Rush	OBL
Elymus canadensis	Nodding Wild Rye	FACU
Elymus cinereus	**Basin Wild Rye**	**UPL**
Elymus repens	Creeping Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Erigeron annuus	Eastern Daisy Fleabane	FACU
Festuca pratensis	Meadow Fescue	FACU
Festuca sp.	Fescue	NL
Glycyrrhiza lepidota	American Licorice	FACU
Grindelia squarrosa	Curly-Cup Gumweed	FACU

[1]Draft NWPL (Lichvar and Kartesz, 2009).

New species identified in 2013 are bolded.

Table1. (Continued). Vegetation species observed in 2011, 2012 and 2013 at the Dodson East Wetland Mitigation Site.

Scientific Names	Common Names	GP Indicator Status[1]
Helianthus annuus	**Common Sunflower**	**FACU**
Heliomeris multiflora	Showy Goldeneye	UPL
Hordeum jubatum	Fox-Tail Barley	FACW
Iva axillaris	**Deer-Root**	**FAC**
Lactuca serriola	Prickly Lettuce	FAC
Lemna minor	Common Duckweed	OBL
Lepidium perfoliatum	Clasping Pepperwort	FAC
Leymus cinereus	Great Basin Lyme Grass	FAC
Medicago lupulina	**Black Medick**	**FACU**
Melilotus officinalis	Yellow Sweet-Clover	FACU
Melilotus sp.	**Sweetclover**	**NL**
Mentha arvensis	**American Wild Mint**	**FACW**
Pascopyrum smithii	Western-Wheat Grass	FACU
Polygonum aviculare	Yard Knotweed	FACU
Populus deltoides	Eastern Cottonwood	FAC
Puccinellia nuttalliana	Nuttall's Alkali Grass	OBL
Rumex crispus	Curly Dock	FAC
Ruppia maritima	**Beaked Ditch-Grass**	**OBL**
Sarcobatus vermiculatus	Greasewood	FAC
Schoenoplectus acutus	Hard-Stem Club-Rush	OBL
Schoenoplectus maritimus	Saltmarsh Club-Rush	OBL
Schoenoplectus pungens	Three-Square	OBL
Scirpus pallidus	**Pale Bulrush**	**OBL**
Scutellaria galericulata	Hooded Skullcap	OBL
Solidago canadensis	Canadian Goldenrod	FACU
Sonchus arvensis	Field Sow-Thistle	FAC
Spartina pectinata	Freshwater Cord Grass	FACW
Suaeda calceoliformis	Paiuteweed	FACW
Symphoricarpos albus	Common Snowberry	FACU
Thlaspi arvense	Field Penny-Cress	FACU
Typha angustifolia	**Narrow-Leaf Cat-Tail**	**OBL**
Typha latifolia	Broad-Leaf Cat-Tail	OBL

1Draft NWPL (Lichvar and Kartesz, 2009).

New species identified in 2013 are bolded.

Wetland community Type 4 – *Alopecurus pratensis* characterized the 0.82 acre wetland area located between the cells. The project plan sheet indicated an ephemeral drainage previously flowed through this area. This community has continued to increase in size since 2011. The creek drainage pattern was evident during the 2012 and 2013 investigations. Field meadow-foxtail (*Alopecurus pratensis*) dominated the community with less than 20 percent cover

of narrow-leaf cattail (*Typha angustifolia*), Nuttall's alkaligrass, and nine other hydrophytic species.

Wetland community Type 6 – Aquatic macrophytes/open water characterized 5.37 acres on inundation within the east and west cells. The community was classified as an aquatic bed vegetation class generally defined as being dominated by plants "that grow principally on or below the surface of the water for most of the growing season in almost all years (aquatic macrophytes) (Cowardin et al. 1979)." The Montana Natural Heritage Program (MTNHP) website further defines the Palustrine Aquatic Bed Class as having aquatic plants at greater than 30 percent cover and water depths between 0.5 and 2 meters (MTNHP 2011). The community was composed of saltmarsh club-rush, hard stem club rush, northern water plantain, and aquatic macrophytes. Green algae (protist kingdom) were also observed on the water surface. The water levels in the cells ranged from one to three feet deep in August 2013 and appear to maintain perennial inundation.

Data collected on Transect 1 (Mitigation Monitoring Form, Appendix B) are summarized in tabular and graphic formats (Table 2, Charts 1 and 2, respectively). Photographs of the start and finish of Transect 1 are included on Page C-15 of Appendix C. The transect intersected upland community Type 3 and wetland communities Type 2 and Type 6 in 2013, the same communities as in 2011 and 2012. Hydrophytic vegetation communities dominated 67.6 percent of this transect in 2012 and 2013 and reflected no change of the wetland boundary across this transect. As noted above, some of the lower elevations within community 3 – *Puccinellia nuttalliana* may develop wetland characteristics if the duration and extent of soil saturation in the community increases. A total of 18 vegetative species were identified along T-1 in 2013, including 8 hydrophytes and 10 upland species.

Table 2. Data summary for Transect 1 in 2011, 2012 and 2013 at the Dodson East Wetland Mitigation Site.

Monitoring Year	**2011**	**2012**	**2013**
Transect Length (feet)	**244**	**244**	**244**
Vegetation Community Transitions along Transect	4	4	4
Vegetation Communities along Transect	4	3	3
Hydrophytic Vegetation Communities along Transect	2	2	2
Total Vegetative Species	19	17	18
Total Hydrophytic Species	9	6	8
Total Upland Species	10	11	10
Estimated % Total Vegetative Cover	60	60	60
% Transect Length Comprising Hydrophytic Vegetation Communities	65.2	67.6	67.6
% Transect Length Comprising Upland Vegetation Communities	34.8	32.4	32.4
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0
% Transect Length Comprising Bare Substrate	0.0	0.0	0.0

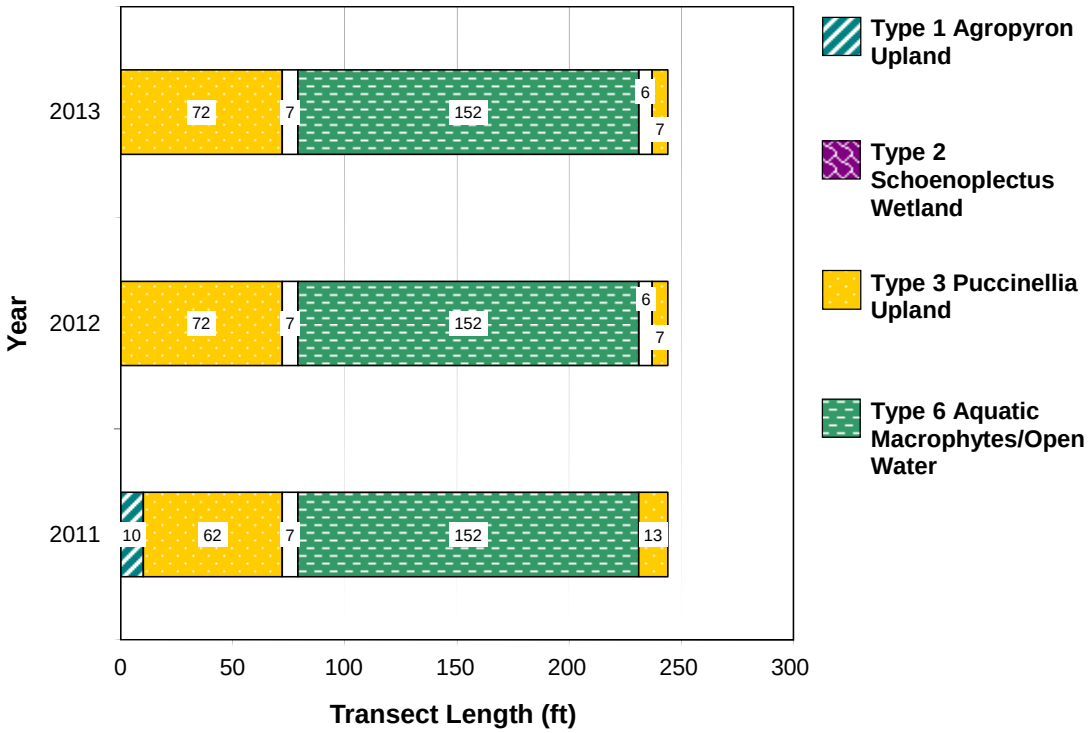


Chart 1.Transect map showing community types on Transect 1, East Cell, in 2011, 2012, and 2013 from start (0 feet) to finish (244 feet) at the Dodson East Wetland Mitigation Site.

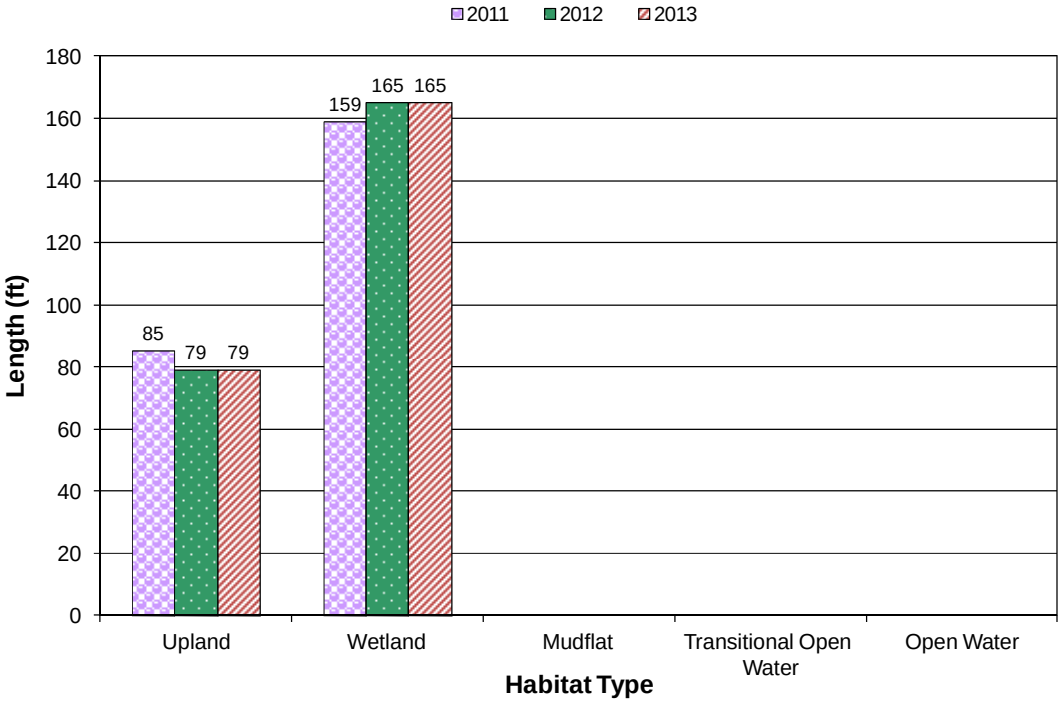


Chart 2. Length of habitat types within Transect 1, East Cell, in 2011, 2012 and 2013 at the Dodson East Wetland Mitigation Site.

The data for Transect 2 (Mitigation Monitoring Form, Appendix B) is summarized on Table 3 and Charts 3 and 4. Photographs of the transect are shown on page C-16 of Appendix C. Wetland communities 2, 4, and 6 dominated 99.0 percent of the transect in 2013. In 2012, the majority of this transect was dominated by community Type 5 – *Alisma/Schoenoplectus*, which has been reclassified as Type 6 in 2013. *Schoenoplectus* spp. continued to establish along the northern and southern shoreline of the west cell. Fifteen vegetative species were identified along the transect, including eight hydrophytes and seven upland species.

No Priority 2B noxious weeds were identified at the site from 2011 to 2013. Approximately ten Russian olive (*Elaegnus angustifolia*) trees were observed in the northwest corner of the project area inside the fenced mitigation boundary. Russian olive is considered a Priority 3 weed that has the potential to have significant negative impacts. The state recommends research, education and prevention to minimize the spread of this regulated plant. No woody vegetation was installed at this site.

Table 3. Data summary for Transect 2 in 2011, 2012, and 2013 at the Dodson East Wetland Mitigation Site.

Monitoring Year	2011	2012	2013
Transect Length (feet)	**207**	**207**	**207**
Vegetation Community Transitions along Transect	2	4	4
Vegetation Communities along Transect	2	4	4
Hydrophytic Vegetation Communities along Transect	1	3	3
Total Vegetative Species	8	13	15
Total Hydrophytic Species	6	6	8
Total Upland Species	2	7	7
Estimated % Total Vegetative Cover	75	75	75
% Transect Length Comprising Hydrophytic Vegetation Communities	96.6	99.0	99.0
% Transect Length Comprising Upland Vegetation Communities	3.4	1.0	1.0
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0
% Transect Length Comprising Bare Substrate	0.0	0.0	0.0

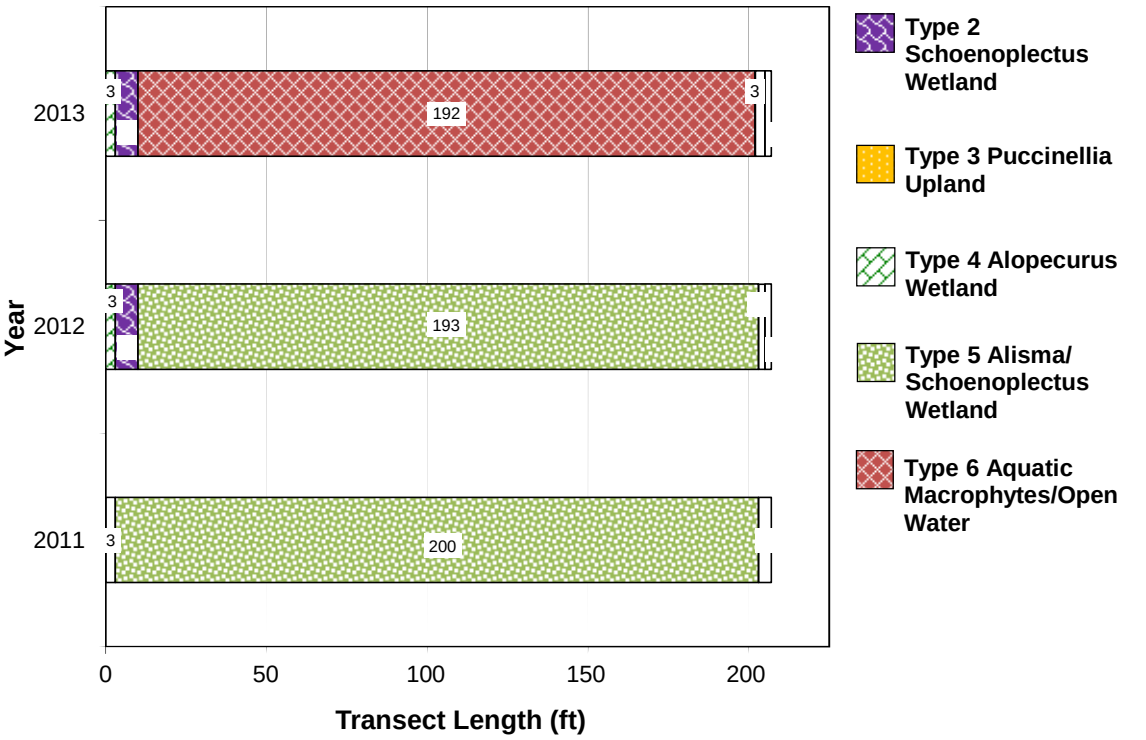


Chart 3. Transect map showing community types on Transect 2, West Cell, in 2011, 2012 and 2013 from start (0 feet) to finish (207 feet) at the Dodson East Wetland Mitigation Site.

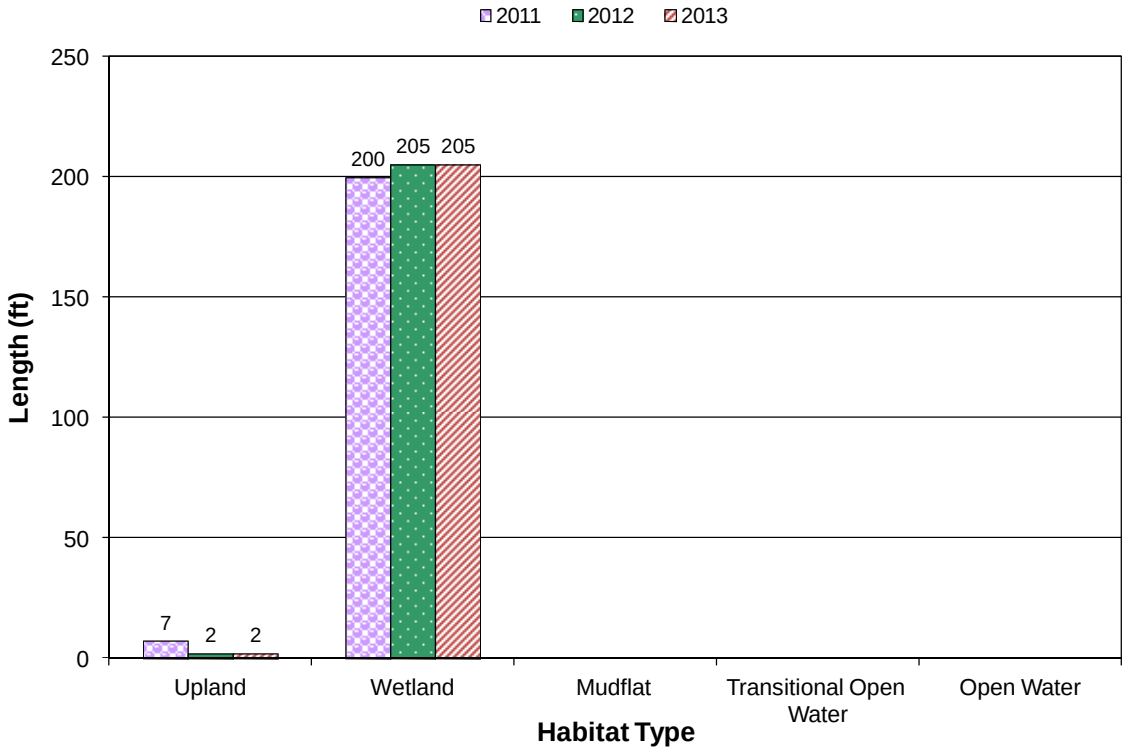


Chart 4. Length of habitat types within Transect 2, West Cell, in 2011, 2012 and 2013 at the Dodson East Wetland Mitigation Site.

3.3. Soil

The project site was mapped in the Phillips County Soil Survey (USDA 2011) within the Havre loam and Bigsag clay soil map units found on 0 to 2 percent slopes. The parent materials of the Havre loam and Big Sag clay soils include alluvium and glaciolacustrine deposits. These soil types are found on floodplain landforms. The Bigsag clay is a poorly drained hydric soil, taxonomically classified as a poorly drained frigid Typic Halaquept. The Lallie loam, a hydric component of the Havre loam map unit, is classified as a frigid Vertic Fluvaquent. The test pit soils generally confirmed the map units.

Data point DE-1w was located in wetland community Type 2. The soil profile revealed a dark gray clay loam (7.5 YR 4/1) with five percent dark yellowish brown (10 YR 4/4) redoximorphic concentrations. The depleted matrix was a positive indicator of hydric soil. Data point DE-1u was located in upland community Type 3. The soil at DH-1u was a dark grayish brown clay (10 YR 4/2) from 3 to 14 inches without redox features in the upper 12 inches of the profile. Redox concentrations were observed 14 inches below the ground surface and suggest that a shallow groundwater is present within this area. There were no positive indicators of hydric soil at the required depth.

3.4. Wetland Delineation

The total acreage of emergent and aquatic bed wetland delineated in 2013 was 8.34 acres, an increase of 0.6 acres since 2012 (Table 4; Figure 3, Appendix B). Wetland acreage was gained within wetland Community Type 2 located along the shores of the inundated cells and in community Type 4 between the wetland cells. There was a corresponding decrease in the acreage of the undisturbed upland buffer corresponding to the increased wetland area.

Table 4. Total wetland and upland acres delineated in 2011, 2012 and 2013 at the Dodson East Wetland Mitigation Site.

WETLAND AND UPLAND HABITATS	2011 (acres)	2012 (acres)	2013 (acres)
Project Area	14.92	14.92	14.92
Created Wetland	7.29	7.74	8.34
Upland Buffer	7.63	7.18	6.58

3.5. Wildlife

A comprehensive list of bird and other wildlife species observed directly or indirectly from 2011 through 2013 is presented in Table 5. The wildlife species observed in 2013 are listed in bold type in Table 5. The 13 species of bird identified at the site in 2013 included the blue-winged teal (*Anas discors*), lark bunting (*Calamospiza melanocorys*), Western meadowlark (*Stumella neglecta*), yellow warbler (*Dendroica petechia*), American robin (*Turdus migratorius*), bank swallow (*Riparia riparia*), killdeer (*Charadrius vociferous*), mallard *(Anas platyrhynchos*), and red-winged blackbird (*Agelaius phoeniceus*). There are currently no nesting structures installed at the site. Two Northern leopard frogs

(*Rana pipiens*), one plains gartersnake (*Thamnophis radix*), and tracks of a raccoon (*Procyon lotor*) were seen onsite.

Table 5. Wildlife species observed within the Dodson East Wetland Mitigation Site in 2011, 2012 and 2013.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIANS	
Northern Leopard Frog	***Rana pipiens***
BIRDS	
American Robin	***Turdus migratorius***
Bank Swallow	***Riparia riparia***
Blue-winged Teal	***Anas discors***
Eastern Kingbird	***Tyrannus tyrannus***
Gray Partridge	***Perdix perdix***
Killdeer	***Charadrius vociferus***
Lark Bunting	***Calamospiza melanocorys***
Mallard	***Anas platyrhynchos***
Mourning Dove	***Zenaida macroura***
Red-winged Blackbird	***Agelaius phoeniceus***
Ring-billed Gull	***Larus delawarensis***
Tree Swallow	*Tachycineta bicolor*
Western Meadowlark	***Sturnella neglecta***
Yellow Warbler	***Dendroica petechia***
MAMMALS	
Deer Sp.	*Odocoileus* sp.
Meadow Vole	*Microtus pennsylvanicus*
Raccoon	***Procyon lotor***
Striped Skunk	*Mephitis mephitis*
White-tailed Deer	*Odocoileus virginianus*
REPTILES	
Painted Turtle	*Chrysemys picta*
Plains Gartersnake	***Thamnophis radix***

Species observed in 2013 are bolded.

3.6. Functional Assessment

The site has been assessed as one wetland assessment area (AA) from 2011 through 2013. The results of the assessments (2008 MWAM) are summarized in Table 6 and the completed forms are located in Appendix B**.** The single AA encompassed the west and east cells and the pre-existing wetland located between the cells.

The 8.34-acre AA was rated as a Category II wetland with 67.5 percent of the total possible points and 56.3 functional units. The overall rating changed from a Category III wetland to a Category II wetland in 2012. The 2013 score decreased one-tenth of a point in the Flood Attenuation function as a result of changing the outlet to unrestricted. Drainage patterns were noted to and from the cells. The increase in functional units in 2013 reflected the expansion of wetland acreage. The ratings were high for short and long term surface water

storage, sediment/nutrient/toxicant removal, streambank/shoreline stabilization, production export/food chain support, and groundwater discharge/recharge and moderate for MTNHP Species Habitat, general wildlife habitat, and flood attenuation. The great blue heron, an S3 species, was identified by the MTNHP in the township and range for the site. The proximity of the highway and railroad grade limits the value of the wildlife habitat.

Table 6. Functions and Values at the Dodson East Wetland Mitigation Site in 2011, 2012 and 2013.

Function and Value Parameters from the 2008 Montana Wetland Assessment Method	2011	2012	2013
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Mod (0.5)	Mod (0.5)	Mod (0.5)
General Wildlife Habitat	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	NA	NA	NA
Flood Attenuation	Mod (0.6)	Mod (0.6)	Mod (0.5)
Short and Long Term Surface Water Storage	High (1.0)	High (1.0)	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Mod (0.7)	High (1.0)	High (1.0)
Production Export/Food Chain Support	High (0.8)	High (0.8)	High (0.8)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.2)	Low (0.2)	Low (0.2)
Recreation/Education Potential (bonus points)	NA	Low (.05)	Low (.05)
Actual Points/Possible Points	**6.2/ 10**	**6.85/ 10**	**6.75/ 10**
% of Possible Score Achieved	**62.0%**	**68.5%**	**67.5%**
Overall Category	**III**	**II**	**II**
Total Acreage of Assessed Wetlands within Site Boundaries	**7.29**	**7.74**	**8.34**
Functional Units (acreage x actual points)	**45.2**	**53.0**	**56.3**

3.7. Photo Documentation

Photographs taken at photo points one through seven (PP1 through PP7; Figure 2, Appendix A) are shown on pages C-1 to C-14 of Appendix C. Transect end points are shown on pages C-15 and C-16 and photographs of the data points are included on page C-17.

3.8. Maintenance Needs

No Priority 2B noxious weeds were identified at the site in 2013. Approximately ten Russian olive trees were observed in the northwest corner of the project area. Russian olive is considered a Priority 3 weed that has the potential to have significant negative impacts. The state recommends research, education and prevention to minimize the spread of this regulated plant. Measures should be taken to ensure that additional Russian olive seedlings do not establish within this mitigation site. There were no nesting structures or inlet/outlet structures controlling water levels installed at the site.

The east bank of the west cell has experienced erosion from wave action and surface drainage, which has compromised the integrity of the fence. The fence may need to be repaired if continued erosion persists.

3.9. Current Credit Summary

The emergent and aquatic bed wetland acreage delineated in 2013 encompassed 8.34 acres, a 0.60 acre increase since 2012 (Table 7). An undisturbed upland buffer of 6.58 acres was delineated within the mitigation site boundaries. The credit ratio for wetland creation was assumed to be 1:1 based on language in USACE Permit Number 2004-90-518. Credit for maintenance of an upland buffer was calculated at a 5:1 ratio. The estimated credit acreage in 2013 totaled 9.66, an increase of 0.48 credit acres since 2012. Additional wetland acreage within the Dodson East mitigation site may develop within the *Puccinellia nuttalliana* community if increased water levels are sustained for sufficient duration.

Table 7. Summary of wetland credits in 2011, 2012 and 2013 at the Dodson East Wetland Mitigation Site.

WETLAND	Credit Ratio	2011 Wetland Acres	2011 Credit Acres	2012 Wetland Acres	2012 Credit Acres	2013 Wetland Acres	2013 Credit Acres
Created Wetland	1:1	7.29	7.29	7.74	7.74	8.34	8.34
Upland Buffer	5:1	7.63	1.53	7.18	1.44	6.58	1.32
Total Credit Acres			**8.82**		**9.18**		**9.66**

The performance standards listed in USACE Permit Number 2004-90-518 required that the created wetlands have at least 60 percent cover by desirable wetland species in the herbaceous layer after 3 years and 75 percent cover after five years. The site was constructed in 2008 and has now been established for over 3 years. The standard of 60 percent cover of desirable wetland species has been met. The cover of emergent vegetation and aquatic macrophytes was estimated at 75 percent in the west cell. The cover of the emergent and aquatic macrophyte vegetation in the east cell is approximately 60 percent. The success criteria also specified that invasive and noxious species were to comprise no more than 10 percent of the relative cover and were not to dominate the vegetation in any extensive area of the mitigation wetland. There were no Priority 2 B noxious weeds observed at the site in 2012 or 2013. Russian olive, an aggressive Priority 3 weed, was present onsite but did not exceed 10 percent cover. The wetland was to be inundated or saturated to the ground surface continuously for at least 12.5 percent of the growing season in most years. Based on current hydrologic indicators, the footprint of the wetland cells has been inundated and/or saturated for a majority of the growing season annually since 2008. The acreage requirement stipulating the creation of at least 4.92 acres of emergent and aquatic bed wetland was exceeded in 2011, 2012, and 2013.

4. REFERENCES

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Appendix A

Project Area Maps
Figure 2 – 2013 Monitoring Activity Locations
Figure 3 – 2013 Mapped Site Features

MDT Wetland Mitigation Monitoring
Dodson East
Phillips County, Montana

Figure 2: 2013 Monitoring Activity Locations

PP7
T2-Start
T2-Finish
PP6
PP4
PP5
DE-1w
DE-1u
T1-Start
PP3
T1-Finish
PP2
PP1

N

0 125 250 500

Feet

GRAPHICAL REPRESENTATION MAY OR MAY NOT DEPICT THE LEGAL DESCRIPTION OF ANY PARCEL HEREIN. THIS FIGURE IS A VISUAL AID ONLY; BOUNDARY RESTORATION MUST BE MADE BY A LICENSED LAND SURVEYOR. THIS FIGURE IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. CONFLUENCE MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Phillips Co., MT

PROJECT NO: NH 1-8(15)454F

FILE: DodsonEast/Monitor2013.mxd

Project Name
Dodson East Mitigation Site

Drawing Title
2013 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	LU

SCALE: Noted

Drawn: September 11, 2013

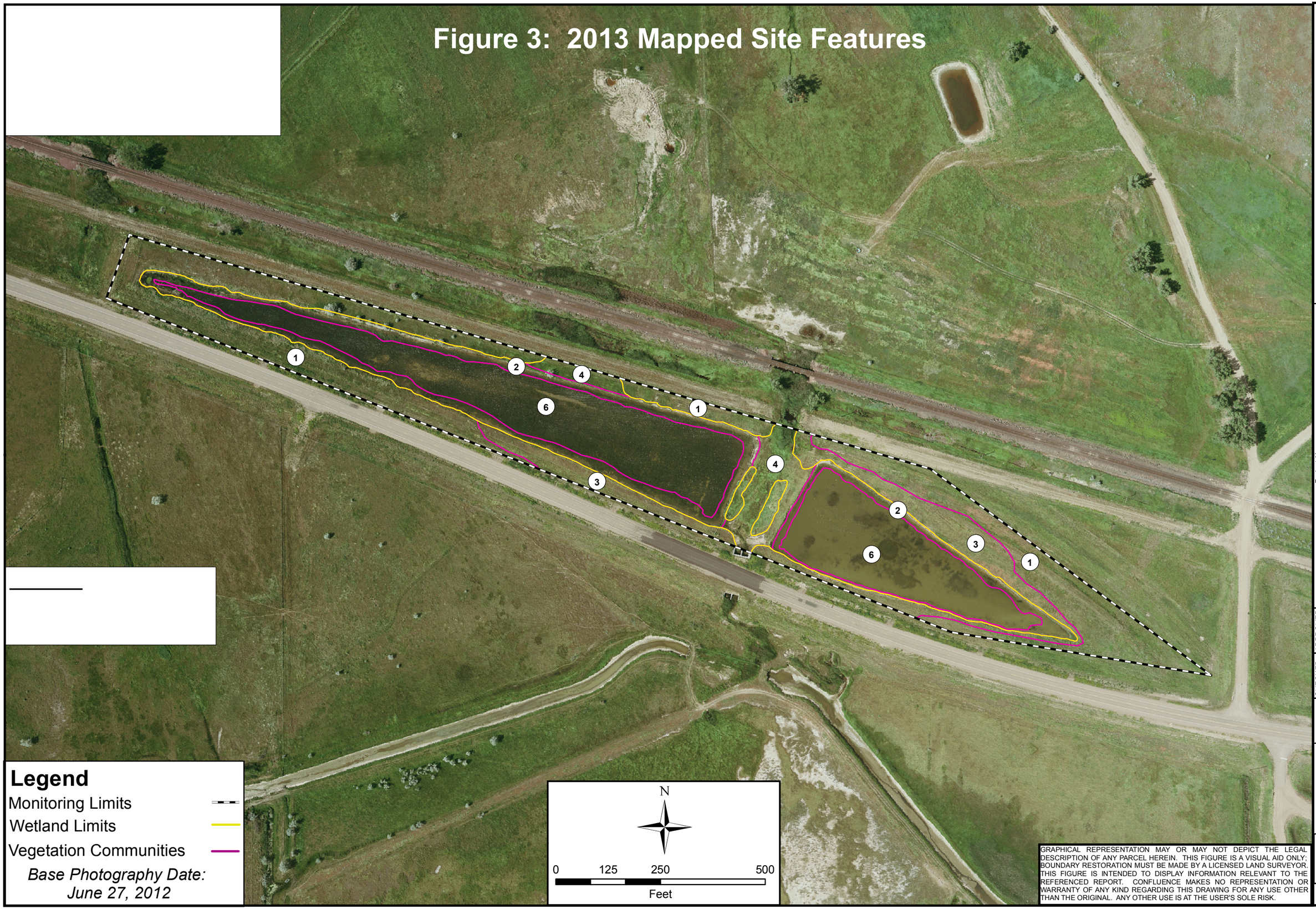
PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure
2

REV -

Figure 3: 2013 Mapped Site Features



Legend

- Monitoring Limits
- Wetland Limits
- Vegetation Communities

Base Photography Date: June 27, 2012

N

0 125 250 500

Feet

GRAPHICAL REPRESENTATION MAY OR MAY NOT DEPICT THE LEGAL DESCRIPTION OF ANY PARCEL HEREIN. THIS FIGURE IS A VISUAL AID ONLY; BOUNDARY RESTORATION MUST BE MADE BY A LICENSED LAND SURVEYOR. THIS FIGURE IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. CONFLUENCE MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Phillips Co., MT

PROJECT NO: NH 1-8(15)454F

FILE: DodsonEast/Veg2013.mxd

Project Name
Dodson East Mitigation Site

Drawing Title
2013 Mapped Site Features

DRAWN	CHECKED	APPROVED
BCS	RLB	LU

SCALE: Noted

Drawn: September 11, 2013

PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure 3

REV -

Appendix B

2013 MDT Wetland Mitigation Site Monitoring Form
2013 USACE Wetland Determination Data Forms – Great Plains Region
2013 MDT Montana Wetland Assessment Form

MDT Wetland Mitigation Monitoring
Dodson East
Phillips County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Dodson East Assessment Date/Time 8/9/2013 7:11:55 AM

Person(s) conducting the assessment: B Sandefur, E Sandefur

Weather: Cool & mild, overcast Location: Approx. 4mi E of Dodson

MDT District: Glendive Milepost: ~457.7 on Hwy 2

Legal Description: T 30N R 27E Section(s) 1 & 2

Initial Evaluation Date: 8/12/2011 Monitoring Year: 3 #Visits in Year: 1

Size of Evaluation Area: 14.9 (acres)

Land use surrounding wetland:

Agriculture (grazing), US Hwy 2

HYDROLOGY

Surface Water Source: Spring creek flood event, groundwater, surface runoff and precip.

Inundation: ☑ Average Depth: 2 **(ft)** Range of Depths: 0-3.0 **(ft)**

Percent of assessment area under inundation: 50 %

Depth at emergent vegetation-open water boundary: 0.8 **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: Yes

Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc**:**

Surface soil cracks, saturation, drain patterns, algal mats, drift & sediment deposits, FAC-neutral vegetation, aquatic invertebrates.

Groundwater Monitoring Wells

Record depth of water surface below ground surface, in feet.

Well ID	Water Surface Depth (ft)
No Wells	

Additional Activities Checklist:

☐ Map emergent vegetation-open water boundary on aerial photograph.

☐ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)

☐ Use GPS to survey groundwater monitoring well locations, if present.

Hydrology Notes:

Constructed cells inundated. Drain patterns between constructed cells, obvious signs of surface water drainage into cells and through culvert under US Hwy 2.

VEGETATION COMMUNITIES

Site Dodson East

(Cover Class Codes **0** = < 1%, **1** = 1-5%, **2** = 6-10%, **3** = 11-20%, **4** = 21-50% , **5** = >50%)

* Indicates accepted spp name not on '88 list.

Community # 1 **Community Type:** Elymus spp. / **Acres** 4.85

Species	Cover class	Species	Cover class
Agropyron cristatum	3	Alopecurus pratensis	1
Asclepias speciosa	0	Bassia scoparia	2
Bromus inermis	2	Chenopodium album	1
Elaeagnus angustifolia	1	Elymus canadensis	1
Elymus repens	3	Elymus trachycaulus	1
Glycyrrhiza lepidota	0	Grindelia squarrosa	2
Helianthus annuus	0	Lactuca serriola	1
Lepidium perfoliatum	1	Melilotus officinalis	1
Puccinellia nuttalliana	1	Rumex crispus	1
Sarcobatus vermiculatus	1	Sonchus arvensis	2
Thlaspi arvense	1		

Comments:

Community # 2 **Community Type:** Schoenoplectus spp. / **Acres** 2.15

Species	Cover class	Species	Cover class
Algae, green	1	Alisma triviale	1
Distichlis spicata	1	Eleocharis palustris	1
Glycyrrhiza lepidota	0	Hordeum jubatum	2
Open Water	2	Open Water	0
Populus deltoides	0	Puccinellia nuttalliana	1
Rumex crispus	1	Schoenoplectus acutus	2
Schoenoplectus maritimus	4	Scirpus pallidus	0
Sonchus arvensis	0	Spartina pectinata	1
Typha angustifolia	1		

Comments:

Community # 3 Community Type: Puccinellia nuttalliana / **Acres** 1.74

Species	Cover class	Species	Cover class
Agropyron cristatum	0	Asclepias speciosa	0
Bassia scoparia	0	Bromus inermis	0
Chenopodium album	1	Elymus canadensis	0
Elymus cinereus	0	Elymus repens	3
Elymus trachycaulus	1	Grindelia squarrosa	1
Hordeum jubatum	1	Iva axillaris	1
Lactuca serriola	1	Lepidium perfoliatum	0
Medicago lupulina	1	Melilotus officinalis	1
Melilotus sp.	0	Pascopyrum smithii	0
Puccinellia nuttalliana	3	Rumex crispus	1
Schoenoplectus maritimus	0	Sonchus arvensis	1
Spartina pectinata	0	Suaeda calceoliformis	1

Comments:

Community # 4 Community Type: Alopecurus pratensis / **Acres** 0.82

Species	Cover class	Species	Cover class
Alisma triviale	1	Alopecurus pratensis	4
Asclepias speciosa	0	Carex stipata	0
Elymus trachycaulus	1	Glycyrrhiza lepidota	0
Melilotus officinalis	1	Mentha arvensis	0
Puccinellia nuttalliana	2	Rumex crispus	1
Schoenoplectus acutus	1	Schoenoplectus maritimus	1
Sonchus arvensis	1	Spartina pectinata	1
Symphoricarpos albus	1	Typha angustifolia	3

Comments:

Community # 6 Community Type: Aquatic macrophytes / Open Water **Acres** 5.37

Species	Cover class	Species	Cover class
Algae, green	2	Alisma triviale	2
Aquatic macrophytes	3	Melilotus sp.	1
Open Water	5	Puccinellia nuttalliana	1
Ruppia maritima	2	Schoenoplectus acutus	2
Schoenoplectus maritimus	2	Sonchus arvensis	1
Spartina pectinata	1	Typha angustifolia	2

Comments:

Total Vegetation Community Acreage **14.93**

(Note: some area within the project bounds may be open water or other non-vegetative ground cover.

VEGETATION TRANSECTS

Site: Dodson East Date: 8/9/2013 7:11:55 AM

Transect Number: 1 **Compass Direction from Start:** 210

Interval Data:

Ending Station 72 **Community Type:** Puccinellia nuttalliana /

Species	Cover class	Species	Cover class
Agropyron cristatum	1	Bassia scoparia	1
Chenopodium album	1	Elymus trachycaulus	2
Iva axillaris	1	Lactuca serriola	1
Lepidium perfoliatum	2	Puccinellia nuttalliana	2
Rumex crispus	1		

Ending Station 79 **Community Type:** Schoenoplectus spp. /

Species	Cover class	Species	Cover class
Bare Ground	2	Open Water	4
Schoenoplectus maritimus	1		

Ending Station 231 **Community Type:** Aquatic macrophytes / Open Water

Species	Cover class	Species	Cover class
Alisma triviale	0	Aquatic macrophytes	4
Open Water	5	Schoenoplectus maritimus	0

Ending Station 237 **Community Type:** Schoenoplectus spp. /

Species	Cover class	Species	Cover class
Alisma triviale	0	Bare Ground	1
Hordeum jubatum	1	Schoenoplectus maritimus	3

Ending Station 244 **Community Type:** Puccinellia nuttalliana /

Species	Cover class	Species	Cover class
Elymus repens	1	Hordeum jubatum	1
Lactuca serriola	1	Medicago lupulina	1
Puccinellia nuttalliana	3	Sonchus arvensis	0

Transect Notes:

Transect Number: 2 **Compass Direction from Start:** 195

Interval Data:

Ending Station 3 **Community Type:** Alopecurus pratensis /

Species	Cover class	Species	Cover class
Alopecurus pratensis	5	Asclepias speciosa	1
Sonchus arvensis	1	Spartina pectinata	1

Ending Station 10 **Community Type:** Schoenoplectus spp. /

Species	Cover class	Species	Cover class
Bare Ground	3	Open Water	3
Schoenoplectus acutus	1	Schoenoplectus maritimus	2
Typha angustifolia	1		

Ending Station 202 **Community Type:** Aquatic macrophytes / Open Water

Species	Cover class	Species	Cover class
Alisma triviale	0	Aquatic macrophytes	4
Open Water	5	Schoenoplectus maritimus	0

Ending Station 205 **Community Type:** Schoenoplectus spp. /

Species	Cover class	Species	Cover class
Algae, green	1	Bare Ground	3
Open Water	4	Schoenoplectus maritimus	4
Sonchus arvensis	1	Spartina pectinata	1

Ending Station 207 **Community Type:** Puccinellia nuttalliana /

Species	Cover class	Species	Cover class
Hordeum jubatum	1	Melilotus sp.	1
Puccinellia nuttalliana	3	Sonchus arvensis	3

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Dodson East

Planting Type	#Planted	#Alive	Notes
None planted			

Comments

Site vegetated with seeded and salvaged wetland sod. No woody species planted.

Dodson East

WILDLIFE

Birds

Were man-made nesting structures installed? No

If yes, type of structure: _____

How many? _____

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Robin	2	FO, L	SS, UP
Bank Swallow	7	F, N	OW, WM
Blue-winged Teal	9	F, L, N	MA, OW
Eastern Kingbird	3	FO	UP, WM
Gray Partridge	8	FO	OW, UP, WM
Killdeer	3	F	MA, WM, US
Lark Bunting	2	FO	OW
Mallard	13	F, L	OW
Mourning Dove	3	FO	UP
Red-winged Blackbird	3	F, L	MA, OW, WM
Ring-billed Gull	2	FO	OW
Western Meadowlark	4	L	OW, WM
Yellow Warbler	3	L	WM

Bird Comments

BEHAVIOR CODES

BP = One of a breeding pair **BD** = Breeding display **F** = Foraging **FO** = Flyover **L** = Loafing **N** = Nesting

HABITAT CODES

AB = Aquatic bed **SS** = Scrub/Shrub **FO** = Forested **UP** = Upland buffer **I** = Island

WM = Wet meadow **MA** = Marsh **US** = Unconsolidated shore **MF** = Mud Flat **OW** = Open Water

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Northern Leopard Frog	2	No	No	No	
Plains Gartersnake	1	No	No	No	
Raccoon		Yes	No	No	

Wildlife Comments:

Dodson East

PHOTOGRAPHS

Take photographs of the following permanent reference points listed in the check list below. Record the direction of the photograph using a compass. When at the site for the first time, establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3 feet above ground. Survey the location with a resource grade GPS and mark the location on the aerial photograph.

Photograph Checklist:

☐ One photograph for each of the four cardinal directions surrounding the wetland.

☐ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.

☐ At least one photograph showing the buffer surrounding the wetland.

☐ One photograph from each end of the vegetation transect, showing the transect.

Photo #	Latitude	Longitude	Bearing	Description
1084-87	48.381226	-108.168152	270	PP1
1088	48.381413	-108.171402	30	T-1, end
1089	48.381973	-108.17041	225	T-1, start
1090-93	48.381191	-108.169777	270	PP2
1094-97	48.381828	-108.172661	45	PP3
1098-1101	48.382328	-108.172241	135	PP4
1102-06	48.382549	-108.172798	225	PP6
1107-1111	48.381931	-108.173218	315	PP5
1112	48.382538	-108.175163	15	T-2, end
1114-17	48.383743	-108.178741	90	PP7
1119	48.382935	-108.174904	195	T-2, start
1120	48.381927	-108.170967	140	DE-1u
1123	48.381996667	-108.17134667		DE-1w

Comments:

Dodson East

ADDITIONAL ITEMS CHECKLIST

Hydrology

☐ Map emergent vegetation/open water boundary on aerial photos.
☐ Observe extent of surface water. Look for evidence of past surface water elevations (e.g. drift lines, vegetation staining, erosion, etc).

Photos

☐ One photo from the wetland toward each of the four cardinal directions
☐ One photo showing upland use surrounding the wetland.
☐ One photo showing the buffer around the wetland
☐ One photo from each end of each vegetation transect, toward the transect

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

☑ Delineate wetlands according to applicable USACE protocol (1987 form or Supplement)
☑ Delineate wetland – upland boundary onto aerial photograph.

Wetland Delineation Comments

Functional Assessments

☑ Complete and attach full MDT Montana Wetland Assessment Method field forms.

Functional Assessment Comments:

Maintenance

Were man-made nesting structure installed at this site? No

If yes, do they need to be repaired?

If yes, describe the problems below and indicate if any actions were taken to remedy the problems

Were man-made structures built or installed to impound water or control water flow

into or out of the wetland? No

If yes, are the structures in need of repair?

If yes, describe the problems below.

The eastern bank of the western cell has experienced erosion from wave action and surface drainage and has compromised the integrity of the fence around this cell.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dodson East City/County: Havre loam Sampling Date: 8/9/2013

Applicant/Owner: MDT State: MT Sampling Point: DE-1u

Investigator(s): B Sandefur Section, Township, Range: 1 30N 27E

Landform (hillslope, terrace, etc.): Undulating Local relief (concave, convex, none): flat Slope (%): _____

Subregion (LRR): LRR F Lat: 48.3820633333333 Long: -108.171051666667 Datum: WGS84

Soil Map Unit Name: Havre loam NWI classification: Upland

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 ☑ No ☐	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐ No ☑	
Wetland Hydrology Present?	Yes ☐ No ☑	

Remarks: DP in upland area adjacent to excavated cell. Do not anticipate this area will become wet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Sonchus arvensis	30	☑	FAC
2. Lepidium perfoliatum	25	☑	FAC
3. Chenopodium album	10	☐	FACU
4. Bassia scoparia	20	☑	FACU
5. Elymus trachycaulus	15	☐	FACU
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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: 66.67% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	55	x 3 =	165
FACU species	45	x 4 =	180
UPL species	0	x 5 =	0
Column Totals	100 (A)		345 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: DE-1u

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					Clay Loam	
3-14	10YR 4/2	100					Clay	
14-16	10YR 4/2	95	C M	10YR	4/4	5	Clay	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted 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[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☑

Remarks: No redox in upper foot, high water table appears to fluctuate below 1ft of soil surface.

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? (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: No positive indicator of wetland hydrology observed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dodson East City/County: Phillips Co. Sampling Date: 8/9/2013

Applicant/Owner: MDT State: MT Sampling Point: DE-1w

Investigator(s): B Sandefur Section, Township, Range: 1 30N 27E

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

Subregion (LRR): LRR F Lat: 48.381996667 Long: -108.171341667 Datum: WGS84

Soil Map Unit Name: Havre loam NWI classification: Upland

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 ☑ No ☐

Hydric Soil Present? Yes ☑ No ☐

Wetland Hydrology Present? Yes ☑ No ☐

Is the Sampled Area within a Wetland? Yes ☑ No ☐

Remarks: DP along edge of open water in club-rush community.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Schoenoplectus maritimus	45	☑	OBL
2. Puccinellia nuttalliana	15	☑	OBL
3. Alisma gramineum	5	☐	OBL
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
	65 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65	x 1 =	65
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals	65 (A)		65 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☑ 2 - Dominance Test is >50%

☑ 3 - Prevalence Index is ≤3.0[1]

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

☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: Approx 30% open water/algae.

SOIL

Sampling Point: DE-1w

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 4/1	95	C M	10YR	4/4	5	Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ 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[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☑ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☑ Salt 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): 2

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:

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Dodson-East **2. MDT project#** NH 1-8(15)454F **Control#** 1516

3. Evaluation Date 8/9/2013 **4. Evaluators** B Sandefur **5. Wetland/Site# (s)** Wetland Cell Creation

6. Wetland Location(s): **T** 30N **R** 27E **Sec1** 1&2 **T** **R** **Sec2**

Approx Stationing or Mileposts ~457.7 on Hwy 2

Watershed 10050004 **Watershed/County** Lower Missouri River Watershed/Phillips County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 8.34

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 8.34

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Emergent Wetland	Excavated	Permanent/Perennial	65
Depressional	Aquatic Bed	Excavated	Permanent/Perennial	35

11. Estimated Relative Abundance Abundant

12. General Condition of AA

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

Conditions within AA	*Predominant conditions adjacent to (within 500 feet of) AA*		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is <=15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is <=30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >=30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is <=15%.	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is <=30%.	moderate disturbance	moderate disturbance	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >=30%.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc)

Mitigation site is located between Hwy 2 and railroad. Surrounding land is agricultural/grazing. Wetland cells were constructed in 2008.

ii. Prominent noxious, aquatic nuisance, other exotic species:

Russian olive

iii. Provide brief descriptive summary of AA and surrounding land use/habitat

AA encompasses two wetland cells constructed between highway and railroad. A spring creek (signs of surface water flow apparent during site visit) historically bisected the two cells. A small remnant of an existing wetland that lies between the two cells was included in the AA.

13. Structural Diversity: (based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes], see #10 above)

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
>=3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments: Emergent and aquatic bed classes

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:

i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):

Primary or critical habitat (list species) ◉ D ◉ S

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☑ S

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
Functional Points and Rating	1H	.9H	.8H	.7M	.3L	.1L	0L

Sources for documented use USF&WS T&E database for Phillips County

14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above)

i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):

Primary or critical habitat (list species) ◉ D ◉ S

Secondary habitat (list Species) ○ D ◉ S Great Blue Heron (S3)

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☐ S

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use MTNHP database

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA (check substantial, moderate, or low based on supporting evidence):

Moderate

Substantial (based on any of the following [check]):

- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interviews with local biologists with knowledge of the AA

Minimal (based on any of the following [check]):

- ☐ few or no wildlife observations during peak use periods
- ☐ little to no wildlife sign
- ☐ sparse adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ☑ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ☑ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ adequate adjacent upland food sources
- ☐ interviews with local biologists with knowledge of the AA

ii. Wildlife habitat features (Working from top to bottom, check appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

Structural diversity (see #13)	High								Moderate								Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [check] the functional points and rating)

Evidence of wildlife use (i)	*Wildlife habitat features rating (ii)*			
	Exceptional	High	Moderate	Low
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

Comments High-traffic area likely restricts wildlife usage, although box culverts under US Hwy 2 appears to be used by wildlife as corridor under road. Birds are predominant wildlife group using this site.

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [check the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ◯ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating**

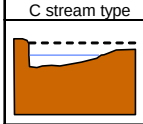
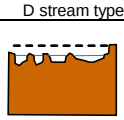
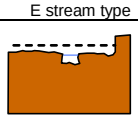
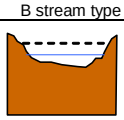
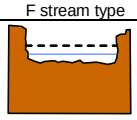
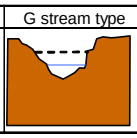
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

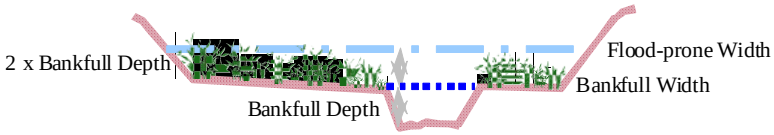
iii. Final Score and Rating: 0 NA **Comments:**

14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, click ☐ **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

Slightly Entrenched ER = >2.2			**Moderately Entrenched ER = 1.41 – 2.2**	**Entrenched ER = 1.0 – 1.4**		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type
						



Floodrpone width / **Bankfull width** = **Entrenchment ratio**

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (check)? **Y** ◯ **N** ◉

Comments: Area subject to inundation from Spring Coulee channel overflow during flood events, culvert sized to not restrict flow. Floodprone width and bankfull width not recorded for spring creek channel, assumed E-type stream.

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, click ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: Wetland cells inundated by groundwater and precipitation during August site visit. Assume approximately 7 acres of wetland flooded to a depth of 2 feet.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments: Cover of wetland veg (emergent and aquatic macrophytes) exceeds 70%. Depression w/o outlet.

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: Although increased vegetation development along shore subject to wave action, some shoreline has exhibited erosion between 2012 and 2013.

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [check])

General Fish Habitat Rating (14D.iii.)	**General Wildlife Habitat Rating (14C.iii.)**		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

A	Vegetated component >5 acres						Vegetated component 1-5 acres						Vegetated component <1 acre					
B	High		Moderate		Low		High		Moderate		Low		High		Moderate		Low	
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1E	.7H	.8H	.5M	.6M	.4M	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ○ **N** ◉ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .8H

Comments: Surface outlet via culvert under highway. Bordered by highway and railroad. Buffer <50ft.

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & ii below)

i. Discharge Indicators

- ☐ The AA is a slope wetland
- ☐ Springs or seeps are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☐ Wetland occurs at the toe of a natural slope
- ☐ Seeps are present at the wetland edge
- ☐ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☑ Shallow water table and the site is saturated to the surface
- ☐ Other:

ii. Recharge Indicators

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

iii. Rating (use the information from i and ii above and the table below to arrive at [check] the functional points and rating)

	Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*			
Criteria	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information		NA		

Comments: Wetland cells inundated during August investigation.

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments:

14L. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (check) **Y** ◉ **N** ○ (if 'Yes' continue with the evaluation; if 'No' then click ☐ **NA** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ☐ Educational/scientific study; ☐ Consumptive rec.; ☑ Non-consumptive rec.; ☐ Other

iii. Rating (use the matrix below to arrive at [check] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

Limited access from highway and limited upland within fence. Remainder of mitigation site is flooded.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): Wetland Cell Creation

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	M	.5	1	4.17	☐
C. General Wildlife Habitat	M	.7	1	5.838	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.5	1	4.17	☐
F. Short and Long Term Surface Water Storage	H	1	1	8.34	☑
G. Sediment/Nutrient/Toxicant Removal	H	1	1	8.34	☐
H. Sediment/Shoreline Stabilization	H	1	1	8.34	☑
I. Production Export/Food Chain Support	H	.8	1	6.672	☑
J. Groundwater Discharge/Recharge	H	1	1	8.34	☑
K. Uniqueness	L	.2	1	1.668	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.417	☐
Totals:		6.75	10	56.295	
Percent of Possible Score			**67.5** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☑ Percent of possible score > 65% (round to nearest whole #).

Category III Wetland: (Criteria for Categories I, II, or IV not satisfied)

☐

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING:
(check appropriate category based on the criteria outlined above)

I	II	III	IV

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Dodson East
Phillips County, Montana



Photo Point 1 – *Photo 1*
Bearing: 270 Degrees

Location: Looking west at mitigation site.
Taken in 2011



Photo Point 1 – *Photo 1*
Bearing: 270 Degrees

Location: Looking west at mitigation site.
Taken in 2012



Photo Point 1 – *Photo 1*
Bearing: 270 Degrees

Location: Looking west at mitigation site.
Taken in 2013



Photo Point 2 – *Photo 1*
Bearing: 270 degrees

Location: Looking west from east edge of east cell.
Taken in 2011



Photo Point 2 – *Photo 1*
Bearing: 270 degrees

Location: Looking west from east edge of east cell.
Taken in 2012



Photo Point 2 – *Photo 1*
Bearing: 270 degrees

Location: Looking west from east edge of east cell.
Taken in 2013



Photo Point 3 – *Photo 1*
Bearing: 45 degrees

Location: Looking northeast at east cell.
Taken in 2011



Photo Point 3 – *Photo 1*
Bearing: 45 degrees

Location: Looking northeast at east cell.
Taken in 2012



Photo Point 3 – *Photo 1*
Bearing: 45 degrees

Location: Looking northeast at east cell.
Taken in 2013



Photo Point 4 – *Photo 1*
Bearing: 135 Degrees

Location: Looking southeast at east cell and Highway 2.
Taken in 2011



Photo Point 4 – *Photo 1*
Bearing: 135 Degrees

Location: Looking southeast at east cell and Highway 2.
Taken in 2012



Photo Point 4 – *Photo 1*
Bearing: 135 Degrees

Location: Looking southeast at east cell and Highway 2.
Taken in 2013



Photo Point 5 – *Photo 1*
Bearing: 315 Degrees

Location: Looking northwest at west cell.
Taken in 2011



Photo Point 5 – *Photo 1*
Bearing: 315 Degrees

Location: Looking northwest at west cell.
Taken in 2012



Photo Point 5 – *Photo 1*
Bearing: 315 Degrees

Location: Looking northwest at west cell.
Taken in 2013



Photo Point 6 – *Photo 1*
Bearing: 225 Degrees

Location: Looking southwest at west cell.
Taken in 2011



Photo Point 6 – *Photo 1*
Bearing: 225 Degrees

Location: Looking southwest at west cell.
Taken in 2012



Photo Point 6 – *Photo 1*
Bearing: 225 Degrees

Location: Looking southwest at west cell.
Taken in 2013



Photo Point 7 – *Photo 1*
Bearing: 90 Degrees

Location: Looking east at west edge of west cell.
Taken in 2011



Photo Point 7 – *Photo 1*
Bearing: 90 Degrees

Location: Looking east at west edge of west cell.
Taken in 2012



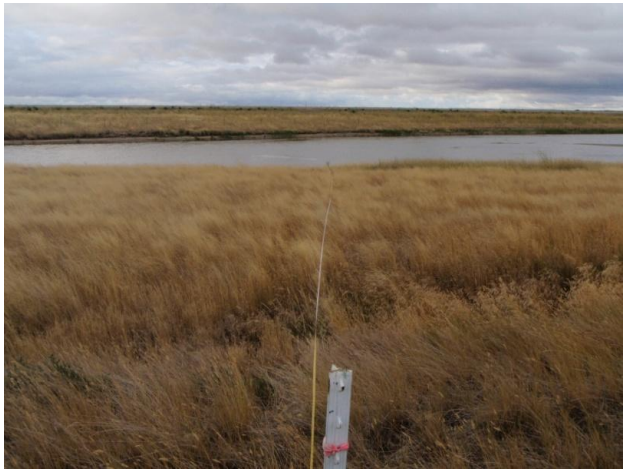
Photo Point 7 – *Photo 1*
Bearing: 90 Degrees

Location: Looking east at west edge of west cell.
Taken in 2013



Transect 1 – Beginning
Bearing: 225 Degrees

Location: East cell (north).
Taken in 2011



Transect 1 – Beginning
Bearing: 225 Degrees

Location: East cell (north).
Taken in 2012



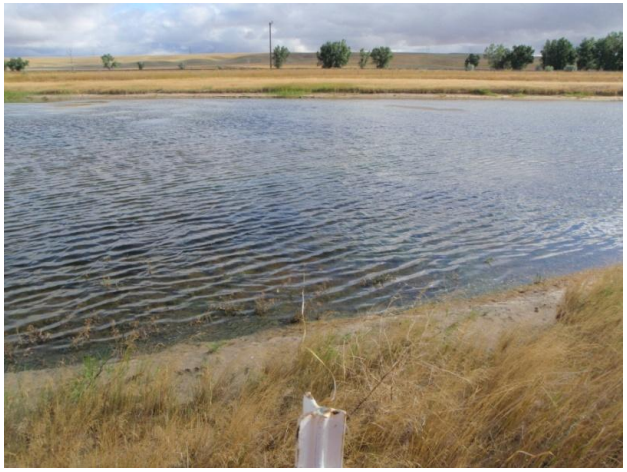
Transect 1 – Beginning
Bearing: 225 Degrees

Location: East cell (north).
Taken in 2013



Transect 1 – *End*
Bearing: 0 Degrees

Location: East cell (south).
Taken in 2011



Transect 1 – *End*
Bearing: 0 Degrees

Location: East cell (south).
Taken in 2012



Transect 1 – *End*
Bearing: 30 Degrees

Location: East cell (south).
Taken in 2013



Transect 2 – Beginning
Bearing: 195 Degrees

Location: West cell (north)
Taken in 2011



Transect 2 – Beginning
Bearing: 195 Degrees

Location: West cell (north)
Taken in 2012



Transect 2 – Beginning
Bearing: 195 Degrees

Location: West cell (north)
Taken in 2013



Transect 2 – *End*
Bearing: 15 Degrees

Location: West cell (south)
Taken in 2011



Transect 2 – *End*
Bearing: 15 Degrees

Location: West cell (south)
Taken in 2012



Transect 2 – *End*
Bearing: 15 Degrees

Location: West cell (south)
Taken in 2013



Data Point – *DE-1u* **Location:** Community 3
Bearing: **Taken in 2013**

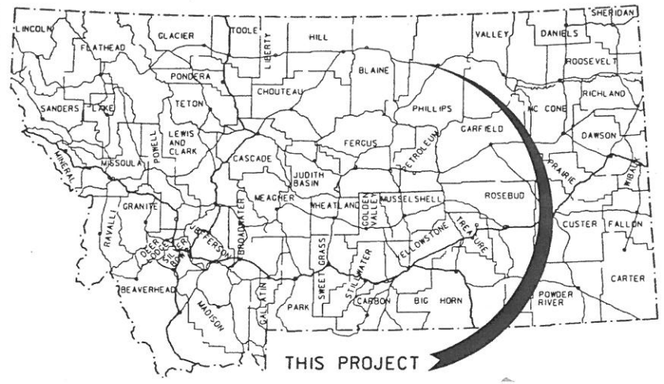


Data Point 2 – *DE-1w* **Location:** Community 2
Bearing: **Taken in 2013**

Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring
Dodson East
Phillips County, Montana



MONTANA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT NO. NH 1-8(26)454 F
GRADE, GRAVEL, PL. MIX SURF. & STRUCTURE
DODSON – EAST
PHILLIPS COUNTY

DESIGN DATA
2003 A.D.T. = 1160
2023 A.D.T. = 1410
D.H.V. = 180
D. = 55-45%
T. = 12.1%
V. = 110 km/h
80 kN ESAL'S = 115
GROWTH RATE = 1.0%

LETTING DATE – _____

LENGTH 7.1 kilometers

SURFACING SOURCES - CONTRACTOR FURNISHED

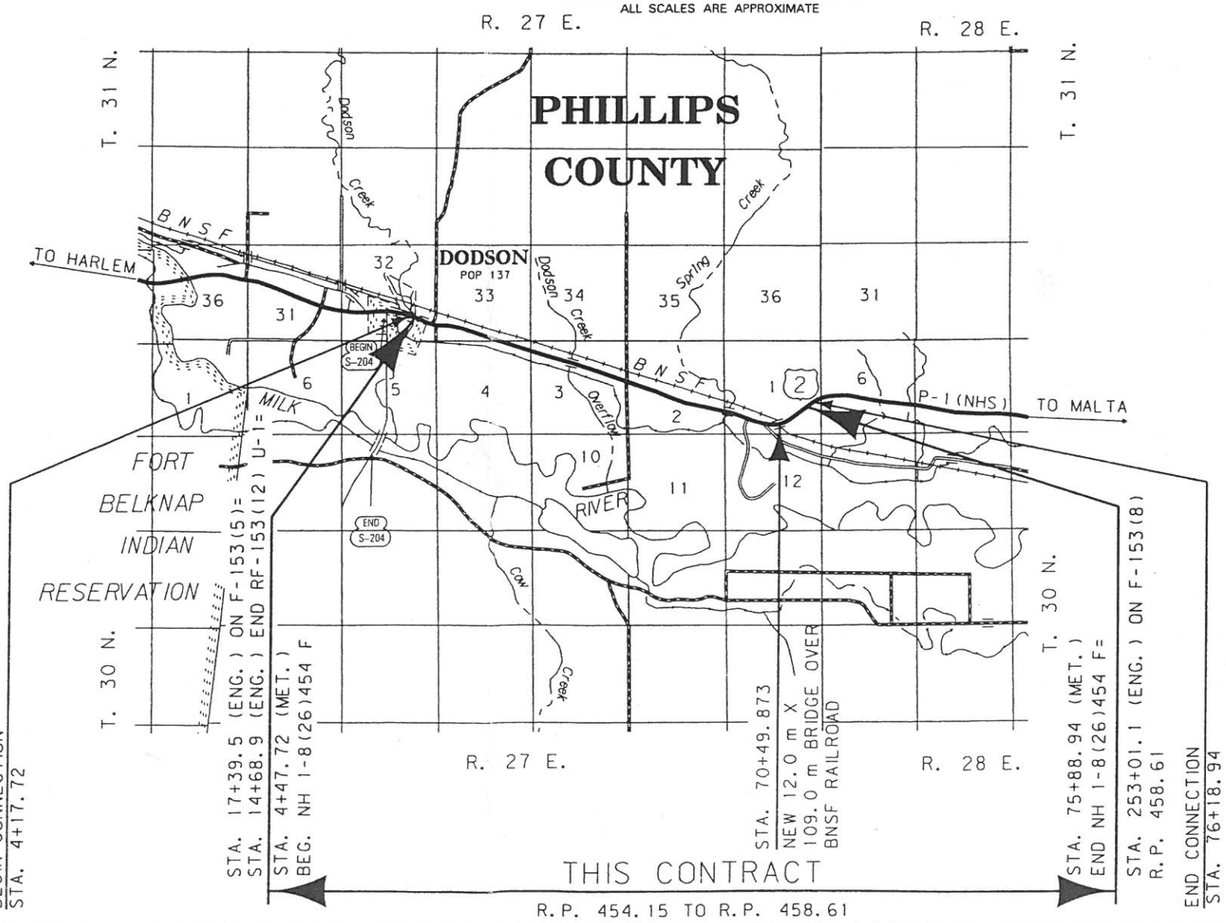
SCALES

VERTICAL: 1 : 100

HORIZONTAL: 1 : 1000

CROSS SECTION – HORIZONTAL & VERTICAL: 1 : 100

REDUCED PRINTS ONE-HALF ORIGINAL SCALE
ALL SCALES ARE APPROXIMATE



RELATED PROJECTS

ASSOCIATED PROJECT AGREEMENT NUMBERS	
R/W & I.C.	NH 1-8(32)454 F
P.E.	NH-F 1-8(15)454 F

CONTROL NO. 1516

MONTANA DEPARTMENT OF TRANSPORTATION

APPROVED Nov 15, 2006

JIM LYNCH
DIRECTOR OF TRANSPORTATION

BY Paul Ferry
HIGHWAYS ENGINEER

MONTANA REGISTERED PROFESSIONAL ENGINEER
PAUL R. FERRY
8425E

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED :

DIVISION ADMINISTRATOR DATE

MONTANA DEPARTMENT OF TRANSPORTATION
MONTANA CADD

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11/13/2006	REVIEWED BY		
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STATE	PROJECT NUMBER	SHEET
MONTANA	NH 1-8(26)454 F	

SUMMARY

CULVERTS

STATION	BASIC BID ITEMS: CULVERT PIPE mm	BASIC BID ITEMS: meters LENGTH OF PIPE	BASIC BID ITEMS: square meters STAB. GEOTEXTILE	BASIC BID ITEMS: cubic meters FOUNDATION MATERIAL	BASIC BID ITEMS: cubic meters CULVERT EXCAVATION $	PIPE OPTIONS mm: CONCRETE STEEL ALUMINUM	CLASS OR THK.	END SECTIONS: LEFT	END SECTIONS: RIGHT	square meters STAB. GEOTEXTILE	cubic meters FOUNDATION MATERIAL	cubic meters BEDDING MATERIAL	meters HEIGHT OF COVER	SKEW ANGLE	meters REMOVE CULVERT mm x m	REMARKS
12+00.0	600	31.0			35	600 RCP # 600 CSP (68 x 13 CORR.) 600 CAP (68 x 13 CORR.)	CL.2 2.01 1.52	FETS FETS FETS	FETS FETS FETS				1.2			NEW MAINLINE DRAIN
13+29.4					50										610 mm X 23.8 m CMP	REMOVE DRAIN IN PTW LT.
30+00.0	600	40.0			20	600 RCP # 600 CSP (68 x 13 CORR.) 600 CAP (68 x 13 CORR.)	CL.2 2.01 1.52	FETS FETS FETS	FETS FETS FETS				1.5			NEW MAINLINE DRAIN
30+60.0	600	42.5			25	600 RCP # 600 CSP (68 x 13 CORR.) 600 CAP (68 x 13 CORR.)	CL.2 2.01 1.52	FETS FETS FETS	FETS FETS FETS				1.8			NEW MAINLINE DRAIN
41+90.0	600	39.5			5	600 RCP # 600 CSP (68 x 13 CORR.) 600 CAP (68 x 13 CORR.)	CL.2 2.01 1.52	FETS FETS FETS	FETS FETS FETS				1.5			NEW MAINLINE DRAIN
42+30.0	600	37.5			25	600 RCP # 600 CSP (68 x 13 CORR.) 600 CAP (68 x 13 CORR.)	CL.2 2.01 1.52	FETS FETS FETS	FETS FETS FETS				1.2			NEW MAINLINE DRAIN
56+02.0					105										DOUBLE 1219 mm X 19.0 m CMP	REMOVE DBL DRAIN IN PTW LT.
56+15.0	1050	46.0	169.7	83	20	1050 RCP # 1200 CSP (68 x 13 CORR.) 1200 CAP (75 x 25 CORR.)	CL.3 2.01 1.52	FETS FETS FETS	FETS FETS FETS	169.7 85.6 85.6	83 75 75		2.4	20°LT.		NEW MAINLINE DRAIN
66+32.3					310										1372 mm X 24.7 m RCP	REMOVE DRAIN IN PTW RT.
66+38.5	1200	72.5	294.8	153	185	1200 RCP # 1350 CSP (75 x 25 CORR.) 1350 CAP (75 x 25 CORR.)	CL.5 2.01 1.91	FETS 2:1 STEP BEV. 2:1 STEP BEV.	FETS 2:1 STEP BEV. 2:1 STEP BEV.	294.8 307.7 307.7	153 135 135	 138 138	8.4	9°50' RT		NEW MAINLINE DRAIN
72+23.5	900	89.0			10	900 RCP # 900 CSP (68 x 13 CORR.) 900 CAP (68 x 13 CORR.)	CL.5 2.01 2.01	FETS FETS FETS	FETS FETS FETS				10.2	16°LT		NEW MAINLINE DRAIN
72+30.0					2 550										914 mm X 53.0 m RCP	REMOVE DRAIN IN PTW RT.
TOTAL	~	~	464.5	236	~	~	~	~	~	~	~	~	~	~	139.5	

$ FOR INFORMATIONAL PURPOSES ONLY
# COAT IN ACCORDANCE WITH SECTION 709.05 OF THE STANDARD SPECIFICATIONS

* PRECAST REINFORCED CONCRETE BOX CULVERTS

STATION	meters RCB DBL 4200 mm s X 2400 mm r	meters RCB 4800 mm s X 2400 mm r	END SECTIONS LEFT	END SECTIONS RIGHT	cubic meters CULVERT EXCAVATION $	cubic meters CLASS "DD" CONCRETE	cubic meters BEDDING MATERIAL	cubic meters COARSE AGGREGATE -CONCRETE	cubic meters FOUNDATION MATERIAL	square meters PERMANENT EROSION CONTROL MOD. SURV.	square meters STAB. GEOTEXTILE	HEIGHT OF COVER IN meters	SKEW ANGLE	NBI #	REMARKS
18+40		46.0	SQUARE	SQUARE	550		195.4	118.9	198.7	719	395	1.6	30°RT.		SEE DETAIL SHEET
34+77	48.0		2:1 BEV	2:1 BEV	655	10.8	179.9		268.9		511	2.5	32°LT.	P00001456+00301	SEE DETAIL SHEET
42+78		50.0	SQUARE	SQUARE	5		212.5	118.9	216.0	786	429	1.7	41°LT.		SEE DETAIL SHEET
61+32		73.0	2:1 BEV	2:1 BEV	370	11.3	162.0		275.3		518	1.0	11°LT.	P00001457+06701	SEE DETAIL SHEET (DBL RCB 2-36.5 m)
TOTAL	48.0	169.0	~	~	~	22.1	749.8	237.8	958.9	1 505	1 853	~	~	~	

* SEE DETAIL SHEETS
$ FOR INFORMATIONAL PURPOSES ONLY

ITEMS USED IN PLACE FOR INFORMATION ONLY

STATION	REMARKS
18+60.8	381 mm CMP DRAIN IN PTW LT.
21+12.8	381 mm CMP APP PIPE LT.
22+62.6	610 mm CMP SYPHON LT.
22+63.0	762 mm CMP IRR LT.
28+03.8	457 mm CMP APP PIPE LT.
34+25.7	331 mm CMP IRR PIPE /HEADGATE LT.
34+61.0	24.3 m FLUME LT.
44+37.0	381 mm CMP APP PIPE LT.
44+37.4	CONCRETE CHECK LT.
44+44.8	381 mm CMP IRR LT.
44+60.3	914 mm CMP IRR APP PIPE LT.
50+78.0	914 mm CMP IRR IN PTW LT.
52+72.1	457 mm CMP APP PIPE LT.
57+54.5	457 mm CMP APP PIPE LT.
66+66.6	DBL 914 mm CMP LT.
66+71.8	DBL 914 mm CMP LT.

WETLAND SITE (LUMP SUM)

STATION FROM	STATION TO	LUMP SUM	FOR INFORMATIONAL PURPOSES ONLY: cubic meters EXCAVATION	cubic meters TOPSOIL SALVAGING AND PLACING	hectare SEEDING	meters FENCING F5M	meters GATES G2	each SINGLE PANEL	each DOUBLE PANEL	each DEADMAN	REMARKS
56+41.00	64+00.00	1	46 415	3 553	3.6	1 494.2	4.8	6	8	4	LT. OF MAINLINE (SEE DETAIL SHEET)
TOTAL		1	~	~	~	~	~	~	~	~	

WATER LINE & CASING

STATION FROM	STATION TO	meters WATER PIPE C-900 PVC 50 mm	meters WATER PIPE C-900 PVC 100 mm	meters TRENCH BACKFILL*	meters SDR 40 PVC CASING 250 mm	cubic meters BEDDING MATERIAL	each FIRE HYDRANT ASSEMBLY	each GATE VALVE 200 mm	kg DUCTILE IRON FITTINGS	REMARKS
7+31.20			24.0	24.0	24.0	5	1	1	84	TOWN OF DODSON
64+02.00					71.0					PRIVATE WATER LINE
64+02.00 LT.	65+39.85 RT.	214.0		214.0		45				PRIVATE WATER LINE
TOTAL		214.0	24.0	~	95.0	50	1	1	84	

* COST FOR TRENCH BACKFILL IS INCLUDED IN RESPECTIVE PIPE COSTS.

MONTANA DEPARTMENT OF TRANSPORTATION
MONTANA CADD
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DESIGNED BY GLENDIVE DISTRICT
REVIEWED BY
CHECKED BY
7-29-2002 7-29-2002
DESIGNED BY GLENDIVE DISTRICT
REVIEWED BY T. e. andrew
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STATE	PROJECT NUMBER	SHEET
MONTANA	NH 1-8(26)454 F	

MONTANA DEPARTMENT OF TRANSPORTATION

MONTANA CADD

FO — FO — FO — FO — FO — FO

T. 30 N. R. 27 E.

SEC. 2

WETLAND 5G

WETLAND 8

BEG. WETLAND PARCEL 56+40

EX. R/W = R.R. R/W

53+40 R/W 25 m

53+60 R/W 30 m

30.480 m (100')

+00 25 EX. R/W

EX. R/W

30.48 m (100')

DITCH BLOCK PI 56+89.38

WETLAND MITIGATION SITE

INLET DITCH

S 72° 49' 36" E

S 65° 13' 41" E

OUTLET DITCH

PC 54+00.51

+00 30 m

PI = 56+89.38
Δ = 7° 35' 55" (RT)
R = 4 350 m
T = 288.87 m
L = 576.90 m
E = 9.58 m
S = N. C.

52+72.1
457 mm CMP
APP PIPE LT.
USE IN PLACE

56+02
DBL. 1219 mm CMP
DRAIN LT.
REMOVE

56+15.0
NEW 1050 mm
MAINLINE DRAIN
SKEW 20° LT.

+20 G. 5 m CONST. PMT.

5 m CONST. PMT.

57+54.5
457 mm CMP
APP. PIPE LT.
USE IN PLACE

53+20.0
FIELD APPROACH RT.

58+00.0
FIELD APPROACH RT.

56+41 TO 64+00
WETLAND SITE LT.

56+07
INLET DITCH LT.

56+23
OUTLET DITCH RT.

56+30
DITCH BLOCK LT.

51+50.00
EL. 701.10

+0.347%

-0.300%

300m VC

P. T. W.

+15

710 708 706 704 702 700 698 696 694 692 690

51 52 53 54 55 56 57 58

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STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 1-8(26)454 F	41

MONTANA DEPARTMENT OF TRANSPORTATION

MONTANA CADD

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EX. R/W = R.F

EX. R/W = R.R. R/W

EX. R/W = R.R. R/W

WETLAND 5H

WETLAND 12A

WETLAND 12B

WETLAND 8A

WETLAND MITIGATION SITE

WETLAND MITIGATION SITE

INLET DITCH

SPRING CREEK

PC 61+40.15

T. 30 N., R. 27 E.

SEC. 1

SEC. 2

EX. R/W

EX. R/W = R/W END WETLAND PARCEL

EX. R/W

NEW 50 mm WATER LINE

WETLAND 10

WETLAND 9B

OUTLET DITCH

S 65° 13' 41" E

PT 59+77.40

61+19.0
10.0 m X 17.8 m BRIDGE LT.
REMOVE

61+32
NEW DBL. 4800 mm X 2400 mm
RCB DRAIN
SKEW 11° LT.

R/W 61+20
30 m

R/W 61+40.75
35 m

R/W 64+20
35 m

R/W 64+40
40 m

64+02.00 - 36.09 m LT TO
65+39.85 44.27 m RT.
NEW 50 mm C-900 PVC
WATER PIPE

30.48 m (100')

+00 30 m

+00 35 m

+00 40 m

1188
695.479

510
694.775

61+20.00 TO 62+20.00
FOUNDATION TREATMENT
ON EXISTING GROUND

61+28 TO 65+10
P.T.W. REMOVAL LT.

61+29
INLET DITCH LT.

61+36
OUTLET DITCH RT.

400m VC

P.T.W.

P.T.W.

0.300%

+1.695%

+32

62+60.00
EL. 697.80

710
708
706
704
702
700
698
696
694
692
690

58 59 60 61 62 63 64 65

GLENDIVE DISTRICT

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STATE	PROJECT NUMBER	SHEET
MONTANA	NH 1-8(26)454 F	

DETAIL

NEW WETLAND SITE

NO SCALE

7 acres

NEW WETLAND SITE
EXCAVATE TO ELEV. 694.25

SALVAGE WETLAND VEGETATION AND ASSOCIATED SOILS AND PLACE IN NEW WETLAND SITE

CONSTRUCT NEW F5M FENCING AROUND PERIMETER OF WETLAND SITE ON TOP OF 4:1 CUT SLOPE

EXCAVATE TO ELEV. 694.25

TOP OF 4:1 SLOPE

NEW GATE

DITCH BLOCK

PI 56+89.38

WETLAND MITIGATION SITE

WETLAND 5H

WETLAND 12A

WETLAND 12B

INLET DITCH

SPRING CREEK

PC 61+40.75

WETLAND 9A

T. 30 N.

R. 27 E.

WETLAND 10

WETLAND 9B

OUTLET DITCH

NEW 50-mm WATER L

R/W

S 65° 13' 41" E

PI = 56+89.38
Δ = 7° 35' 55" (RT)
R = 4 350 m
T = 288.87 m
L = 576.90 m
E = 9.58 m
S = N.C.

PT 59+77.40

457 Z

457 B

SEC. 1

SEC. 2

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