MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2014

Dodson East
Phillips County, Montana



Prepared for:

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December 2014

MONTANA DEPARTMENT OF TRANSPORTATION

WETLAND MITIGATION MONITORING REPORT:

YEAR 2014

Dodson East
Phillips County, Montana
Constructed: 2008

MDT Project Number: NH 1-8 (15) 454F
Control Number: 1516

USACE: NWO-2004-90-518

Prepared for:

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CCI Project No: MDT.006

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TABLE OF CONTENTS

1. INTRODUCTION 1

2. METHODS 3

2.1. Hydrology 3
2.2. Vegetation 3
2.3. Soil 4
2.4. Wetland Delineation 4
2.5. Wildlife 5
2.6. Functional Assessment 5
2.7. Photo Documentation 5
2.8. GPS Data 5
2.9. Maintenance Needs 6

3. RESULTS 6

3.1. Hydrology 6
3.2. Vegetation 7
3.3. Soil 14
3.4. Wetland Delineation 14
3.5. Wildlife 15
3.6. Functional Assessment 15
3.7. Photo Documentation 17
3.8. Maintenance Needs 17
3.9. Current Credit Summary 17

4. REFERENCES 20

TABLES

Table 1. Vegetation species observed from 2011 thru 2014 at the Dodson East Wetland Mitigation Site. 8
Table 2. Data summary for Transect 1 from 2011 to 2014 at the Dodson East Wetland Mitigation Site. 11
Table 3. Data summary for Transect 2 from 2011 to 2014 at the Dodson East Wetland Mitigation Site. 13
Table 4. Total wetland and upland acres delineated in 2011 thru 2014 at the Dodson East Wetland Mitigation Site. 15
Table 5. Wildlife species observed within the Dodson East Wetland Mitigation Site from 2011 thru 2014. 16
Table 6. Functions and Values at the Dodson East Wetland Mitigation Site from 2011 thru 2014. 17
Table 7. Summary of wetland credits from 2011 thru 2014 at the Dodson East Wetland Mitigation Site. 18
Table 8. Summary of performance standards and success criteria. 19

CHARTS

Chart 1.Transect map showing community types on Transect 1, East Cell, from 2011 to 2014 from start (0 feet) to finish (244 feet) at the Dodson East Wetland Mitigation Site. 11
Chart 2. Length of habitat types within Transect 1, East Cell, from 2011 to 2014 at the Dodson East Wetland Mitigation Site. 12
Chart 3. Transect map showing community types on Transect 2, West Cell, from 2011 to 2014 from start (0 feet) to finish (207 feet) at the Dodson East Wetland Mitigation Site. 13
Chart 4. Length of habitat types within Transect 2, West Cell, from 2011 to 2014 at the Dodson East Wetland Mitigation Site. 14

FIGURES

Figure 1. Project location of Dodson East Wetland Mitigation Site. 2

Figure 1. Project location of Dodson East Wetland Mitigation Site. 2
Figure 2. 2014 Monitoring Activity Locations……..... Appendix A
Figure 3. 2014 Mapped Site Features…… Appendix A

APPENDICES

Appendix A Project Area Maps – Figures 2 and 3
Appendix B 2014 MDT Wetland Mitigation Site Monitoring Form
2014 USACE Wetland Determination Data Forms
2014 MDT Montana Wetland Assessment Method Form
Appendix C Project Area Photographs
Appendix D Project Plan Sheet

Cover: Looking east at *Schoenoplectus* community on edge of east wetland cell.

1. INTRODUCTION

The Dodson East 2014 Wetland Mitigation Monitoring Report presents the results of the fourth and final 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 comprise no more than 10 percent of the relative cover and do 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 2014 Monitoring Activity Locations and 2014 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. Appendix D includes the project plan sheet.

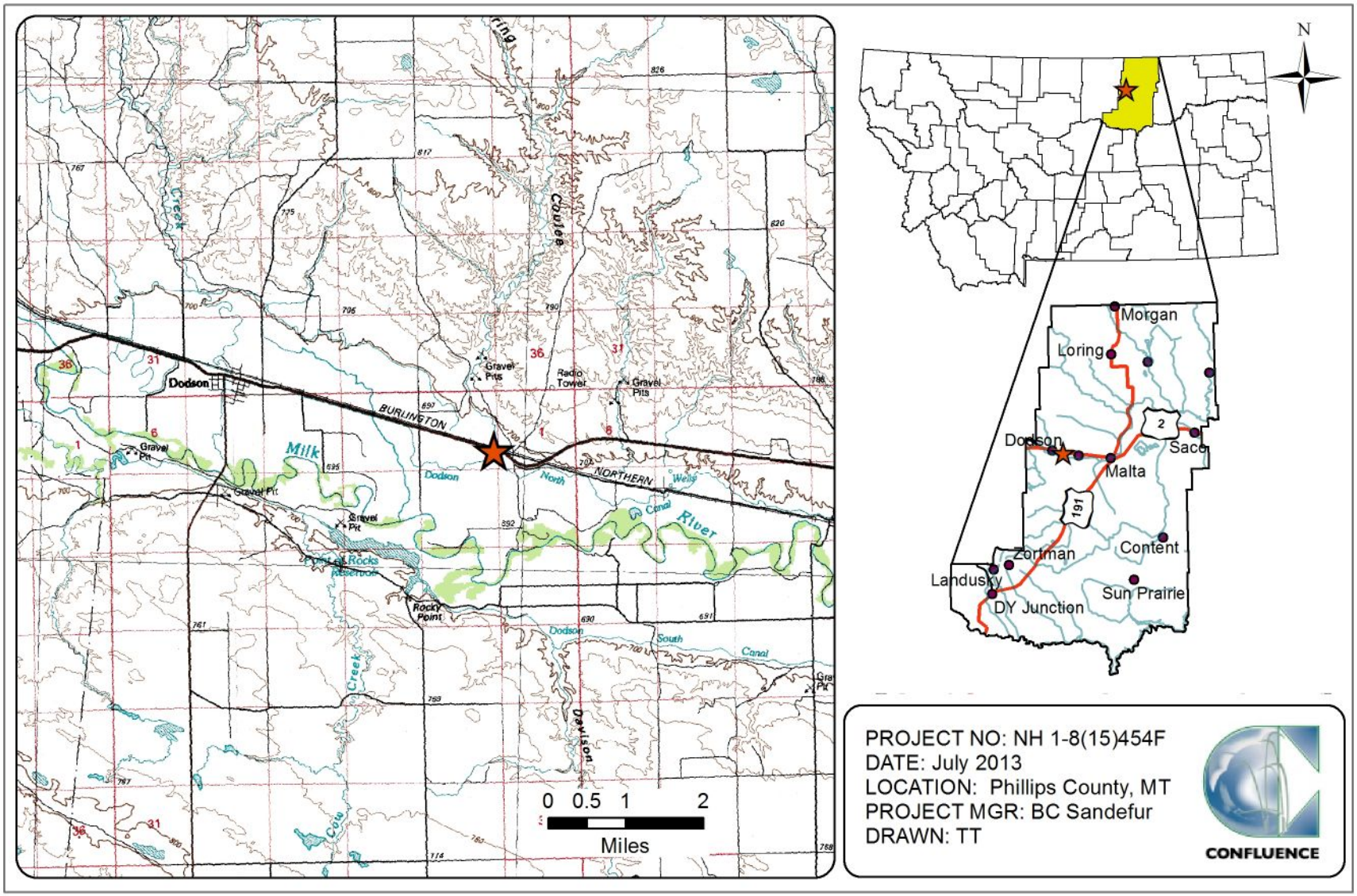


Figure 1. Project location of Dodson East Wetland Mitigation Site.

2. METHODS

The fourth annual monitoring event at Dodson East was completed on August 5, 2014. Information for the Mitigation Monitoring Form and Wetland Determination Data Forms were entered in the field on an electronic tablet 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 2014 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 (Figure 2, Appendix A) established in August 2011

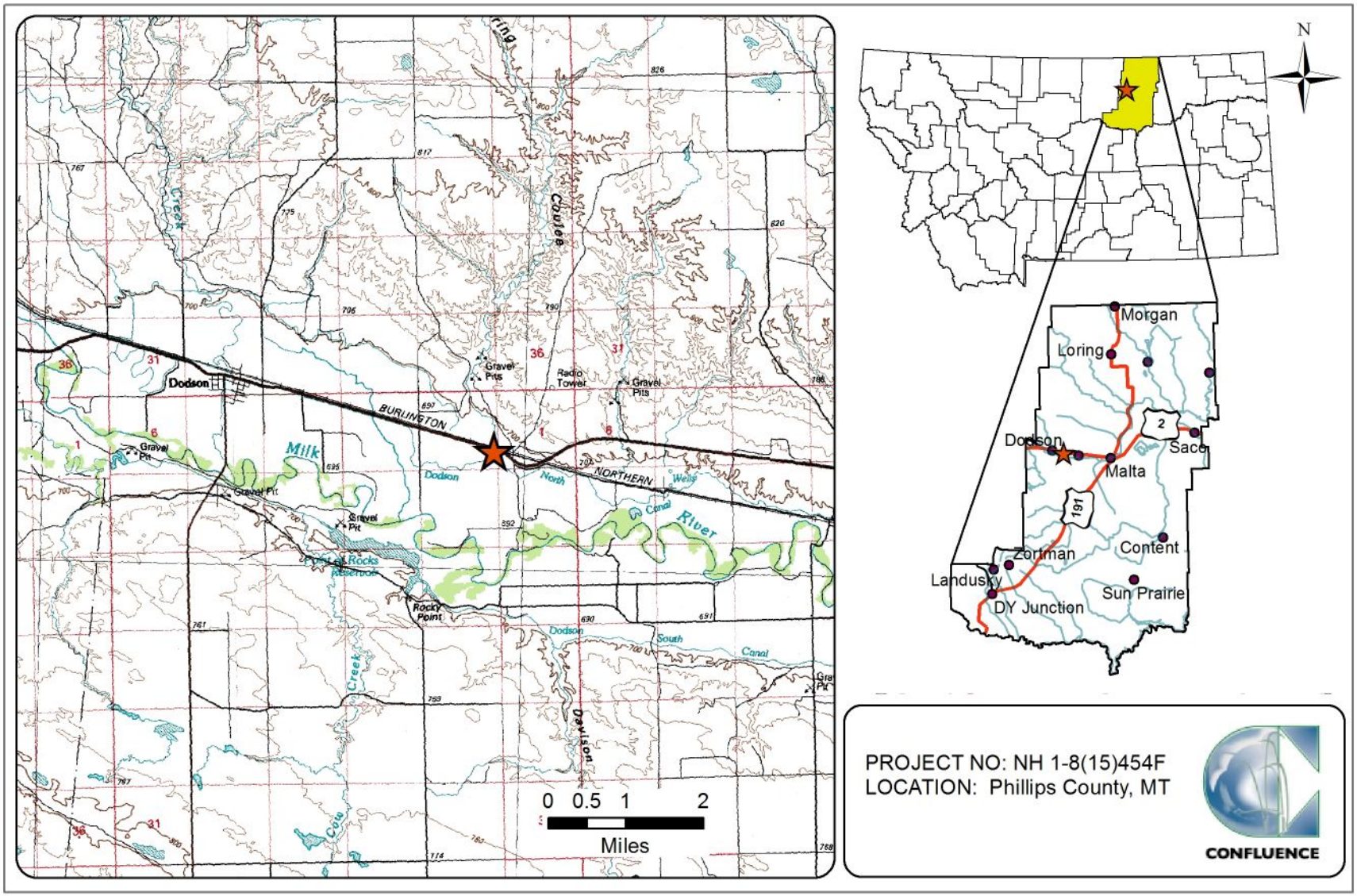


Figure 1. Project location of Dodson East Wetland Mitigation Site.

approximately 3 years following the completion of the project. 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 2014 National Wetland Plant List (NWPL) (Lichvar *et al.* 2014). Previous years' reports used the 1988 National List of Plant Species that Occur in Wetlands: Northwest Region 4 (Reed 1988). The 2014 NWPL scientific plant names were used in this report. 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 2014 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 2014 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 2014. 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 newly 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 2014 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), reported average annual precipitation rates of 10.48 inches from 1951 thru 2012 (WRCC 2013). Annual precipitation in 2011 and 2012 was 15.25 inches and 10.95 inches, respectively. Precipitation totals from January to August were 8.71 inches (long-term average), 13.53 inches (2011), and 10.13 inches (2012). Data collection at this station was discontinued after 2012. The Malta 7E meteorological station (245338), located approximately 18 miles east of the mitigation site, was used to provide supplemental precipitation data. This station recorded an average annual precipitation of 12.78 inches from 1972 to the present. Precipitation in 2013 totaled 16.91 inches, 4 inches greater than the average. Precipitation totals from January to August were 10.01 inches for the 43-year average, 14.05 inches for 2013, and 14.17 inches for 2014. Based on the climate data, 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 and 2014 site visits and appeared to maintain permanent/perennial inundation. 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, geomorphic position, 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 and 2014. A culvert under US Highway 2 provides a drainage outlet for the wetland once the area reaches full capacity to store surface water within the excavated basins. The base of the culvert exhibited signs of seasonal surface water.

Two data points were sampled in 2014 to determine the wetland and upland boundaries. Sample point D-1w was located within wetland community Type 4 –

Alopecurus pratensis in the area between the cells. Secondary hydrological indicators included drainage patterns and geomorphic position. Data point D-1u was located between the cells in an upland island dominated by community Type 1 – *Elymus*. This data point did not exhibit positive wetland indicators. The groundwater depth at data point D-1u appeared to be slightly greater than 12 inches.

3.2. Vegetation

Monitoring year 2014 marked the fourth year of monitoring at the Dodson East wetland mitigation site. Seventy-two plant species have been observed site wide from 2011 through 2014 (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*), saltmarsh club-rush (*Schoenoplectus maritimus*), Western-wheatgrass (*Pascopyrum smithii*), Great Basin lyme grass (*Leymus cinereus*), 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 2014. The communities are described below.

Upland community Type 1 – *Elymus* spp. characterized the 5.76-acre upland buffer upslope of the constructed wetlands. The acreage of this community increased by 0.91 acre from 2013 to 2014 due to the remapping of the upland community Type 3 boundary as *Puccinellia nuttalliana* reduced dominance through this area. 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 on 2.15 acres surrounding the open water of the cells. This community increased by 1.31 acres from 2012 to 2013 as emergent vegetation developed within the open water cells. There was no change to this community boundary between 2013 and 2014. 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 community was inundated.

Upland community Type 3 – *Puccinellia nuttalliana* covered 0.75 acres of the terrace on the north side of the east cell and along the perimeter of the west and east cells. The community acreage decreased by 0.99 acre in 2014, corresponding to the acreage increase noted in upland Type 1. The community

was expected to transition from upland to wetland in the event the groundwater elevation increased enough annually to saturate the soil for a sufficient duration during the growing season. Although Nuttall's alkali grass is a wetland plant, the soil and hydrology in the community did not meet the wetland criteria. Nuttall's alkali grass (11 to 20 percent cover) and creeping wild rye (11 to 20 percent cover) 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, lamb's quarters (*Chenopodium album*), curly-cup gumweed, yellow sweet-clover (*Melilotus officinalis*), and deer-root (*Iva axillaris*).

Table 1. Vegetation species observed from 2011 thru 2014 at the Dodson East Wetland Mitigation Site.

Scientific Names	Common Names	GP Indicator Status[1]
Achillea millefolium	**Common Yarrow**	**FACU**
Agropyron cristatum	Crested Wheatgrass	NL
Algae, green	Algae, green	NL
Alisma plantago-aquatica	European Water-Plantain	NL
Alisma triviale	Northern Water-Plantain	OBL
Alopecurus pratensis	Field Meadow-Foxtail	FACW
Asclepias sp.	Milkweed	NL
Asclepias speciosa	Showy Milkweed	FAC
Avena fatua	Wild Oats	NL
Axyris amaranthoides	Russian Pigweed	NL
Bassia scoparia	Mexican-Fireweed	FACU
Bouteloua dactyloides	Buffalo Grass	FACU
Bouteloua gracilis	Blue Gramma	NL
Bromus inermis	Smooth Brome	UPL
Carex praegracilis	Clustered Field Sedge	FACW
Carex stipata	Stalk-Grain Sedge	OBL
Carex vulpinoidea	Common Fox Sedge	FACW
Chenopodium album	Lamb's-Quarters	FACU
Cirsium arvense	**Canadian Thistle**	**FACU**
Cirsium vulgare	**Bull Thistle**	**UPL**
Convolvulus arvensis	**Field Bindweed**	**NL**
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	Great Basin Wildrye	NL
Elymus repens	Creeping Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Erigeron annuus	Eastern Daisy Fleabane	FACU
Festuca pratensis	Meadow Fescue	NL
Festuca sp.	Fescue	NL
Glycyrrhiza lepidota	American Licorice	FACU
Grindelia squarrosa	Curly-Cup Gumweed	UPL

[1]2014 NWPL (Lichvar *et al* , 2014).

New species identified in 2014 are **bolded**.

Table1. (Continued). Vegetation species observed from 2011 thru 2014 at the Dodson East Wetland Mitigation Site.

Scientific Names	Common Names	GP Indicator Status[1]
Helianthus annuus	Common Sunflower	FACU
Heliomeris multiflora	Showy goldeneye	NL
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	UPL
Medicago lupulina	Black Medick	FACU
Medicago sativa	**Alfalfa**	**UPL**
Melilotus albus	**White Sweetclover**	**NL**
Melilotus officinalis	Yellow Sweet-Clover	FACU
Melilotus sp.	Sweetclover	NL
Mentha arvensis	American Wild Mint	FACW
Panicum capillare	**Common Panic Grass**	**FAC**
Pascopyrum smithii	Western-Wheat Grass	FACU
Plantago major	**Great Plantain**	**FAC**
Polygonum aviculare	Yard Knotweed	FACU
Populus deltoides	Eastern Cottonwood	FAC
Puccinellia nuttalliana	Nuttall's Alkali Grass	OBL
Ratibida columnifera	**Prairie Coneflower**	**NL**
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 microcarpus	**Red-Tinge Bulrush**	**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	UPL
Thlaspi arvense	Field Pennycress	FACU
Trifolium pratense	**Red Clover**	**FACU**
Typha angustifolia	Narrow-Leaf Cat-Tail	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL

[1]2014 NWPL (Lichvar *et al* , 2014).

New species identified in 2014 are **bolded**.

Wetland community Type 4 – *Alopecurus pratensis* characterized the 0.89-acre wetland area located between the cells. There was a slight 0.07-acre increase in the extent of the community from 2013 to 2014. 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 from 2012 through 2014. Field meadow-foxtail (*Alopecurus pratensis*) dominated the community with less than 20 percent cover of each of narrow-leaf cattail (*Typha angustifolia*), Nuttall's alkali grass, and ten other hydrophytic species.

Wetland community Type 6 – Aquatic macrophytes/open water characterized 5.37 acres of the inundated east and west cells and exhibited no change between 2013 and 2014. 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 aquatic macrophytes, saltmarsh club-rush, hard stem club rush, beaked ditch grass (*Ruppia maritima*), and narrow-leaf cattail. Green algae (protist kingdom) were also observed on the water surface.

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 communities Type 1 and 3 and wetland communities Type 2 and Type 6 in 2014, the same transect communities identified since 2011. Hydrophytic vegetation communities dominated 67.6 percent of this transect in 2014, same length of transect in 2012 and 2013. Community 3 – *Puccinellia nuttalliana* decreased by sixty-one feet along this transect in 2014. The lower elevations may develop wetland characteristics if the duration and extent of soil saturation in the community increases; however, the extent of community 3 actually decreased by 1.0 acre in 2014 and suggests this area will not express wetland development. A total of 18 vegetative species were identified along T-1 in 2014, including 8 hydrophytes and 10 upland species. Aside from the slight increase in wetland habitat observed along this transect between 2011 and 2012, habitats have remained consistent the last three years (Chart 2).

Table 2. Data summary for Transect 1 from 2011 to 2014 at the Dodson East Wetland Mitigation Site.

Monitoring Year	2011	2012	2013	2014
Transect Length (feet)	**244**	**244**	**244**	**244**
Vegetation Community Transitions along Transect	4	4	4	5
Vegetation Communities along Transect	4	3	3	4
Hydrophytic Vegetation Communities along Transect	2	2	2	2
Total Vegetative Species	19	17	18	18
Total Hydrophytic Species	9	6	8	8
Total Upland Species	10	11	10	10
Estimated % Total Vegetative Cover	60	60	60	70
Estimated % Unvegetated	40	40	40	30
% Transect Length Comprising Hydrophytic Vegetation Communities	65.2	67.6	67.6	67.6
% Transect Length Comprising Upland Vegetation Communities	34.8	32.4	32.4	32.4
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	0.0	0.0	0.0	0.0

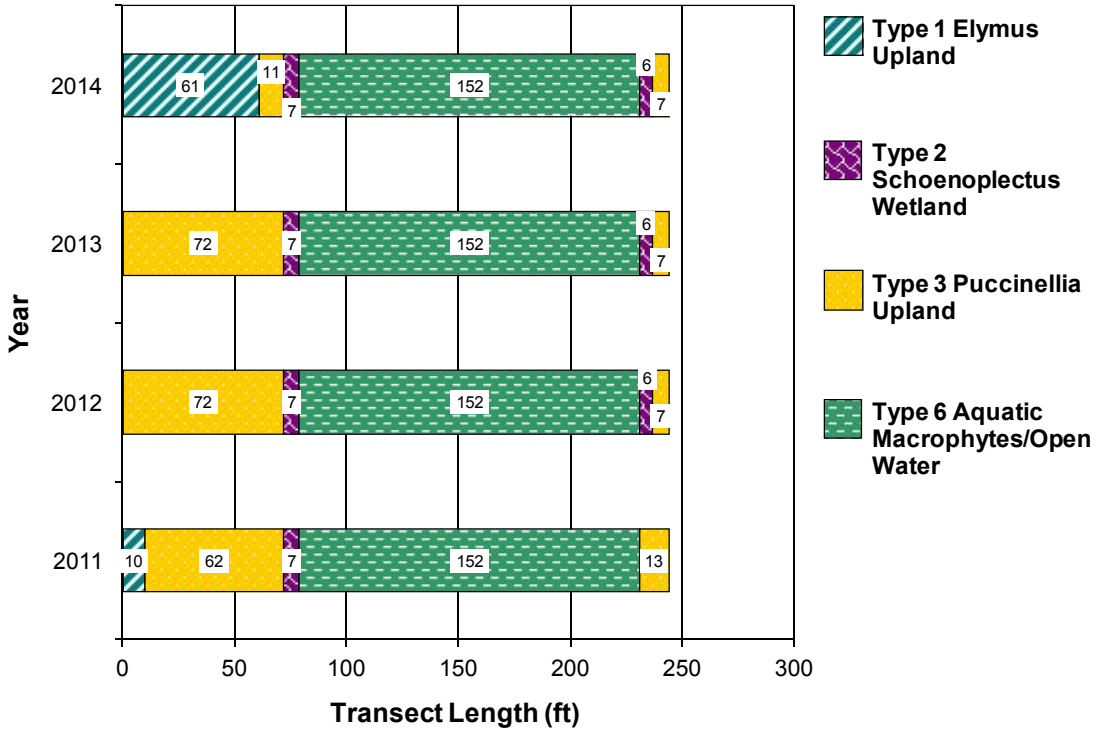


Chart 1.Transect map showing community types on Transect 1, East Cell, from 2011 to 2014 from start (0 feet) to finish (244 feet) at the Dodson East Wetland Mitigation Site.

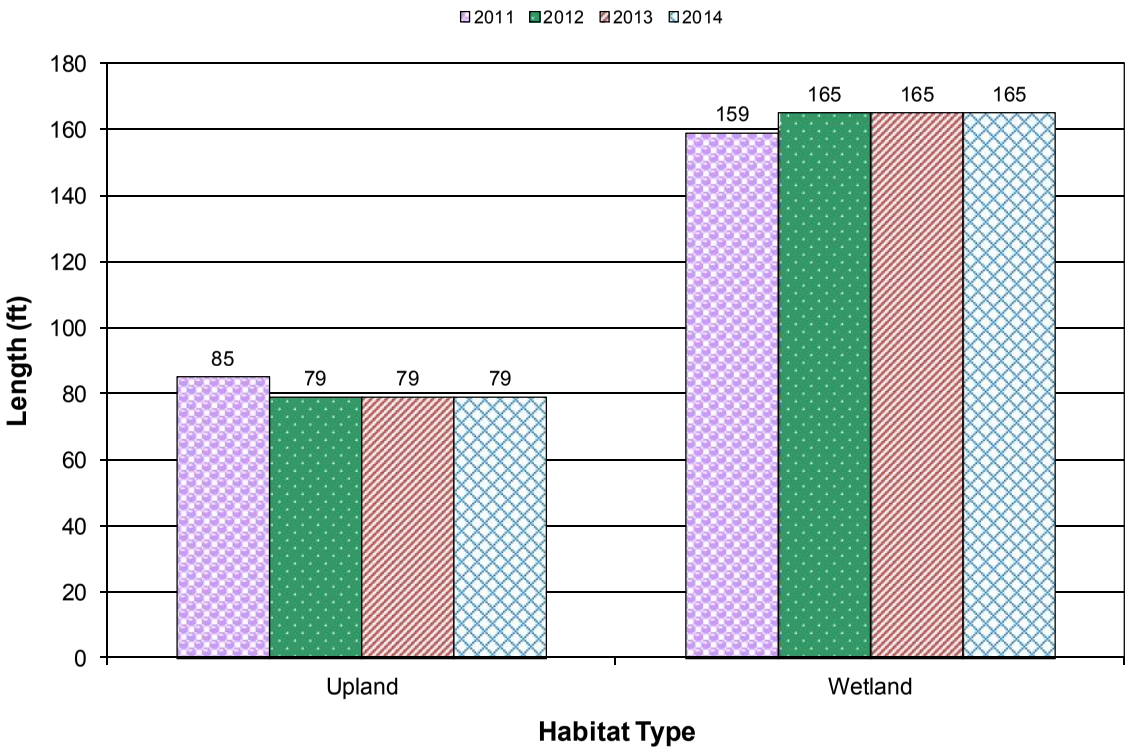


Chart 2. Length of habitat types within Transect 1, East Cell, from 2011 to 2014 at the Dodson East Wetland Mitigation Site.

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 from 2012 to 2014. Upland community Type 3 intersected 1 percent of the transect. In 2012, the majority of this transect was dominated by community Type 5 – *Alisma/Schoenoplectus*, which was reclassified as Type 6 in 2013. *Schoenoplectus* spp. continued to establish along the north and south shoreline of the west cell. Sixteen vegetative species were identified along the transect, including nine hydrophytes and seven upland species.

No Priority 2B noxious weeds were identified at the site from 2011 to 2014. 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. Aside from the Russian olive, no volunteer woody species were identified within the site in 2014.

Table 3. Data summary for Transect 2 from 2011 to 2014 at the Dodson East Wetland Mitigation Site.

Monitoring Year	2011	2012	2013	2014
Transect Length (feet)	207	207	207	207
Vegetation Community Transitions along Transect	2	4	4	4
Vegetation Communities along Transect	2	4	4	4
Hydrophytic Vegetation Communities along Transect	1	3	3	3
Total Vegetative Species	8	13	15	16
Total Hydrophytic Species	6	6	8	9
Total Upland Species	2	7	7	7
Estimated % Total Vegetative Cover	75	75	75	75
Estimated % Unvegetated	25	25	25	25
% Transect Length Comprising Hydrophytic Vegetation Communities	96.6	99.0	99.0	99.0
% Transect Length Comprising Upland Vegetation Communities	3.4	1.0	1.0	1.0
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	0.0	0.0	0.0	0.0

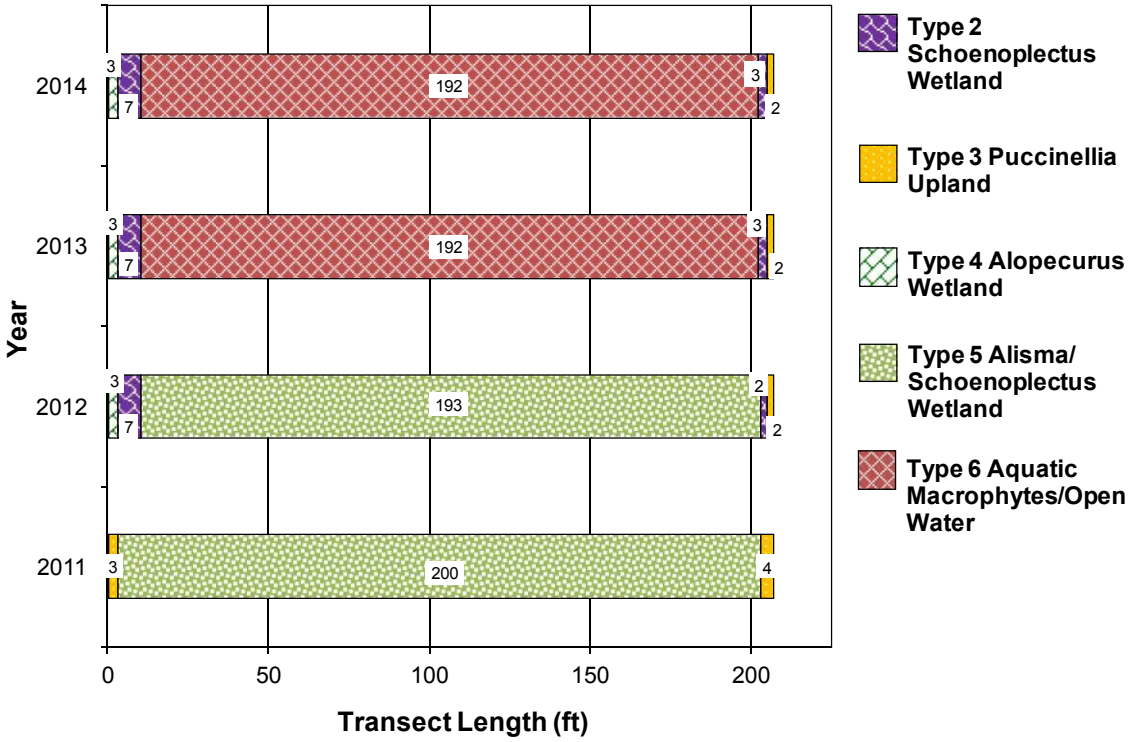


Chart 3. Transect map showing community types on Transect 2, West Cell, from 2011 to 2014 from start (0 feet) to finish (207 feet) at the Dodson East Wetland Mitigation Site.

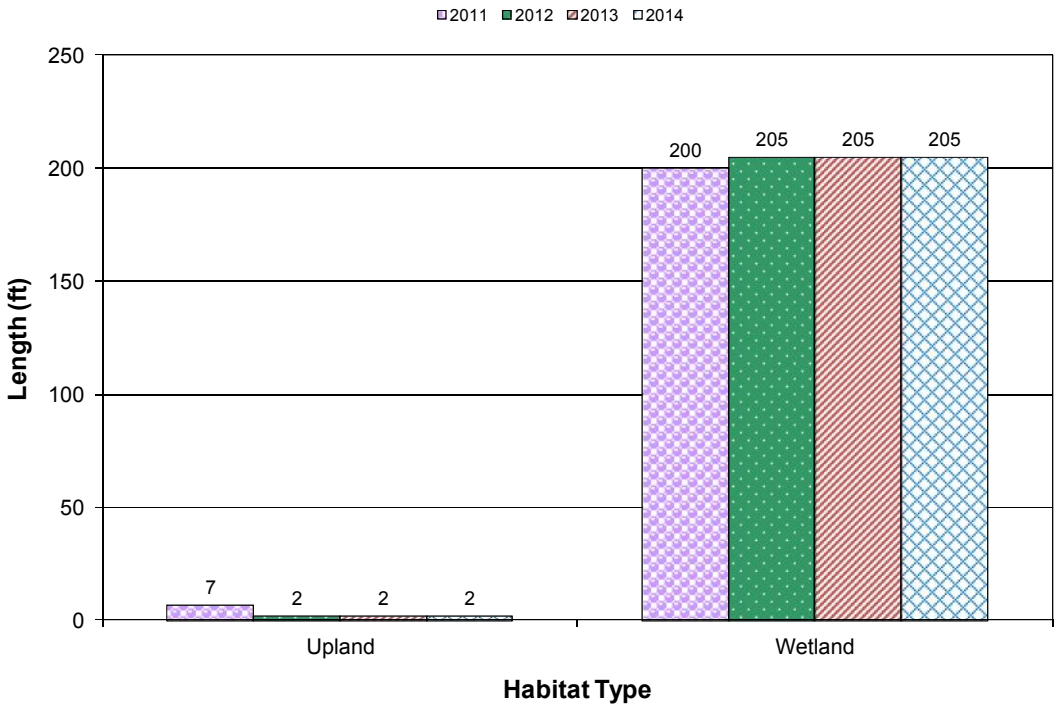


Chart 4. Length of habitat types within Transect 2, West Cell, from 2011 to 2014 at the Dodson East Wetland Mitigation Site.

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 D-1w was located in wetland community Type 4. The soil profile revealed a dark gray clay (10 YR 4/1) with five percent dark yellowish brown (10 YR 4/6) redoximorphic concentrations. The depleted matrix was a positive indicator of hydric soil. Data point D-1u was located in upland community Type 1. The soil at D-1u was grayish brown clay (10 YR 5/2) from 10 to 16 inches with 3 percent, dark yellowish brown (10 YR 4/4) redox features starting at 10 inches below the ground surface. Although the data point met the hydric soil criteria for a depleted matrix, the data point did not met the criteria for hydrophytic vegetation or wetland hydrology.

3.4. Wetland Delineation

The total acreage of emergent and aquatic bed wetland delineated in 2014 was 8.41 acres, up from 8.34 acres in 2013 (Table 4; Figure 3, Appendix B). A slight gain in wetland acreage was mapped within community Type 4 between the wetland cells.

Table 4. Total wetland and upland acres delineated in 2011 thru 2014 at the Dodson East Wetland Mitigation Site.

WETLAND AND UPLAND HABITATS	2011 (acres)	2012 (acres)	2013 (acres)	2014 (acres)
Project Area	14.92	14.92	14.92	14.92
Created Wetland	7.29	7.74	8.34	8.41
Upland Buffer	7.63	7.18	6.58	6.51

3.5. Wildlife

A comprehensive list of bird and other wildlife species observed directly or indirectly from 2011 through 2014 is presented in Table 5. The wildlife species observed in 2014 are listed in bold type in Table 5. The 14 species of bird identified at the site in 2014 included the American goldfinch (*Spinus tristus*), blue-winged teal (*Anas discors*), Western meadowlark (*Stumella neglecta*), yellow warbler (*Dendroica petechia*), American robin (*Turdus migratorius*), bank swallow (*Riparia riparia*), killdeer (*Charadrius vociferous*), sandhill crane (*Grus canadensis*), and red-winged blackbird (*Agelaius phoeniceus*). There are currently no nesting structures installed at the site. A Northern leopard frog (*Rana pipiens*), plains gartersnake (*Thamnophis radix*), tracks of a raccoon (*Procyon lotor*) and deer, and scat of a coyote (*Canis latrans*) were seen onsite.

3.6. Functional Assessment

The site has been assessed as one wetland assessment area (AA) from 2011 through 2014. The results of the assessments (2008 MWAM) are summarized in Table 6 and the completed form is located in Appendix B**.** The single AA encompassed the west and east cells and the pre-existing wetland located between the cells.

The 8.41-acre AA was rated as a Category II wetland with 67.5 percent of the total possible points and 56.8 functional units in 2014. The total acreage of the AA increased by 0.07 acre in 2014. 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 categorization to “unrestricted” based on the observation of drainage patterns to and from the cells. The sediment/nutrient/toxicant removal function rating was reduced by one-tenth of a point in 2014 for consistency. The score of this function is also affected by the presence of an “unrestricted” outlet. The reduction lowered the point total from 6.75 in 2013 to 6.65 in 2014 and the total functional points from 56.3 in 2013 to 55.9 in 2014. The ratings were high for short and long term surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, and groundwater discharge/recharge and moderate for MTNHP Species Habitat, general wildlife habitat, and flood attenuation. The proximity of the highway and railroad grade limits the value of the wildlife habitat.

Table 5. Wildlife species observed within the Dodson East Wetland Mitigation Site from 2011 thru 2014.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIANS	
Columbia Spotted Frog	*Rana luteiventris*
Northern Leopard Frog	***Rana pipiens***
BIRDS	
American Goldfinch	**Spinus tristus**
American Robin	Turdus migratorius
Bank Swallow	Riparia riparia
Barn Swallow	**Hirundo rustica**
Blue-winged Teal	**Anas discors**
Common Nighthawk	**Chordeiles minor**
Double-crested Cormorant	**Phalacrocorax auritus**
Eastern Kingbird	**Tyrannus tyrannus**
Franklin's Gull	**Leucophaeus pipixcan**
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
Sandhill Crane	**Grus canadensis**
Song Sparrow	**Melospiza melodia**
Tree Swallow	Tachycineta bicolor
Western Meadowlark	**Sturnella neglecta**
Wilson's Phalarope	**Phalaropus tricolor**
Yellow Warbler	**Dendroica petechia**
MAMMALS	
Coyote	**Canis latrans**
Deer 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 2014 are bolded.

Table 6. Functions and Values at the Dodson East Wetland Mitigation Site from 2011 thru 2014.

Function and Value Parameters from the 2008 Montana Wetland Assessment Method	2011	2012	2013	2014
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0)
MTNHP Species Habitat	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)
General Wildlife Habitat	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	NA	NA	NA	NA
Flood Attenuation	Mod (0.6)	Mod (0.6)	Mod (0.5)	Mod (0.5)
Short and Long Term Surface Water Storage	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	High (1.0)	High (1.0)	High (0.9)
Sediment/Shoreline Stabilization	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)
Recreation/Education Potential (bonus points)	NA	Low (.05)	Low (.05)	High (0.15)
Actual Points/Possible Points	**6.2/ 10**	**6.85/ 10**	**6.75/ 10**	**6.75/ 10**
% of Possible Score Achieved	**62.0%**	**68.5%**	**67.5%**	**67.5%**
Overall Category	**III**	**II**	**II**	**II**
Total Acreage of Assessed Wetlands within Site Boundaries	**7.29**	**7.74**	**8.34**	**8.41**
Functional Units (acreage x actual points)	**45.2**	**53.0**	**56.3**	**56.8**

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 2014. Approximately ten Russian olive trees were observed in the northwest corner of the project area and were pre-existing prior to project development. 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 was showing signs of erosion from wave action and surface drainage in 2013. This erosion compromised the integrity of the fence along this area between the cells. Increased vegetation development along this bank in 2014 appeared to somewhat stabilize the area from further erosion. Repositioning the T-post vertically is necessary to repair fencing.

3.9. Current Credit Summary

The emergent and aquatic bed wetland acreage delineated in 2014 totaled 8.41 acres, representing a slight 0.07-acre increase since 2013 (Table 7). An undisturbed upland buffer of 6.51 acres was delineated within the mitigation site boundaries. The credit ratio for wetland creation is 1:1, based on language in

USACE Permit Number 2004-90-518 and the Montana Regulatory Programs Wetland Compensatory Mitigation Ratios (2005). Credit for maintenance of an upland buffer was calculated at a 5:1 ratio. The estimated credit acreage in 2014 totaled 9.71 credit acres, a slight increase of 0.05 credit acres since 2013. Additional wetland acreage within the Dodson East mitigation site may develop within the *Puccinellia nuttalliana* community if increased water levels were sustained for sufficient duration although recent trends do not indicate this is likely. This community decreased in size by 1.0 acre in 2014. As this represents the final year of monitoring at this mitigation site, it is recommended to request USACE-approval for the 9.71 credit acres generated at this site.

Table 7. Summary of wetland credits from 2011 thru 2014 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	2014 Wetland Acres	2014 Credit Acres
Created Wetland	1:1	7.29	7.29	7.74	7.74	8.34	8.34	8.41	8.41
Upland Buffer	5:1	7.63	1.53	7.18	1.44	6.58	1.32	6.51	1.30
Total Credit Acres			**8.82**		**9.18**		**9.66**		**9.71**

The performance standards listed in USACE Permit Number 2004-90-518 are summarized in Table 8. The hydrophytic vegetation standard 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 6 years. The standard of 60 percent cover of desirable wetland species was been met in 2011 as the emergent wetland areas around the open water and the inundated aquatic macrophytes and Alisma Plantago-aquatica/Scirpus spp. communities exhibited greater than 60 percent cover by desirable wetland species. All wetland communities identified in 2013 and 2014 exhibited greater than 75 percent cover by desirable hydrophytic species and satisfied this five-year success criterion. All wetland areas identified within the site appeared 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 have been inundated and/or saturated for a majority of the growing season annually since 2008. 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 through 2014. Russian olive, an aggressive Priority 3 weed, was present onsite but did not exceed 10 percent cover. The acreage requirement stipulating the creation of at least 4.92 acres of emergent and aquatic bed wetland has been exceeded since 2011.

Table 8. Summary of performance standards and success criteria.

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Hydrology	Inundated or saturated to the surface continuously for at least 12.5 percent of the growing season in most years.	Y	Areas identified as wetland habitat within the mitigation site exhibit soil saturation for a minimum 12.5 percent of growing season.
Hydrophytic Vegetation	At least 60 percent cover by desirable wetland species in the herbaceous layer after 3 years.	Y	Areas identified as wetland habitat within the mitigation site support a prevalence of hydrophytic vegetation (OBL, FACW, and FAC).
	At least 75 percent cover by desirable wetland species in the herbaceous layer after 5 years.	Y	In all wetland communities identified within the Dodson wetland mitigation site in 2014, desirable wetland species comprised greater than 75 percent cover.
Weed Control	Invasive and noxious species comprise no more than 10 percent of the relative cover and do not dominate the vegetation in any extensive area of the mitigation wetland.	Y	State-listed noxious weed species across the site has been estimated at less than 5 percent absolute cover in 2014.

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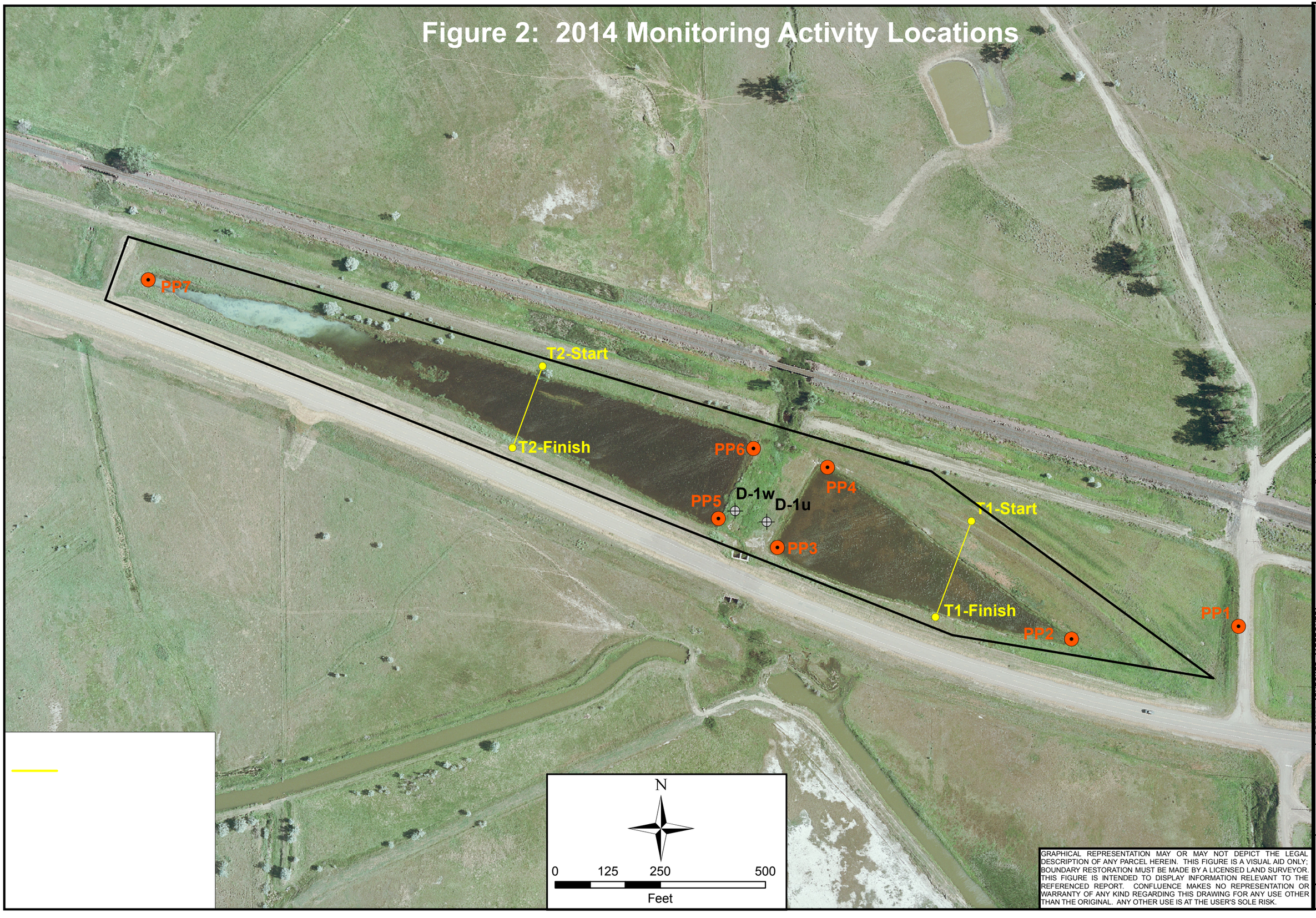
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Appendix A

Project Area Maps
Figure 2 – 2014 Monitoring Activity Locations
Figure 3 – 2014 Mapped Site Features

MDT Wetland Mitigation Monitoring
Dodson East
Phillips County, Montana

Figure 2: 2014 Monitoring Activity Locations



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/Monitor2014.mxd

Project Name
Dodson East Mitigation Site

Drawing Title
2014 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	LU

SCALE: Noted

Drawn: October 10, 2014

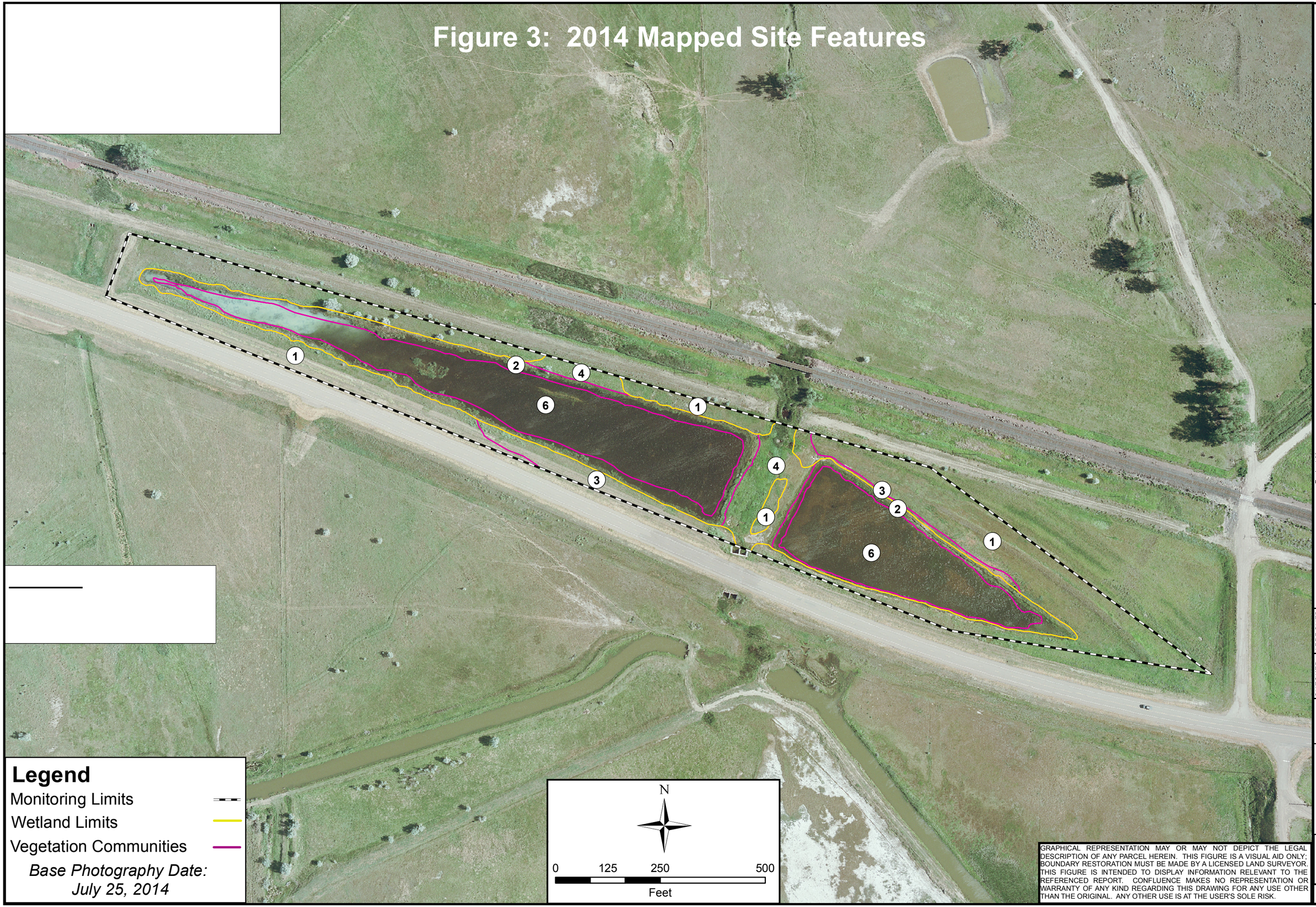
PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure 2

REV -

Figure 3: 2014 Mapped Site Features



Legend

Monitoring Limits

Wetland Limits

Vegetation Communities

Base Photography Date: July 25, 2014

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/Veg2014.mxd

Project Name
Dodson East Mitigation Site

Drawing Title
2014 Mapped Site Features

DRAWN BCS | CHECKED BV | APPROVED LU

SCALE: Noted

Drawn: October 10, 2014

PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure 3

REV -

Appendix B

2014 MDT Wetland Mitigation Site Monitoring Form
2014 USACE Wetland Determination Data Forms – Great Plains Region
2014 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 8/5/2014 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: 4 #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%)

Community # 1 **Community Type:** Elymus spp. / **Acres** 5.76

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agropyron cristatum	3
Alopecurus pratensis	1	Asclepias speciosa	0
Bassia scoparia	2	Bromus inermis	2
Chenopodium album	1	Cirsium arvense	0
Convolvulus arvensis	0	Elaeagnus angustifolia	1
Elymus canadensis	1	Elymus cinereus	0
Elymus repens	3	Elymus trachycaulus	1
Glycyrrhiza lepidota	0	Grindelia squarrosa	2
Helianthus annuus	0	Hordeum jubatum	1
Iva axillaris	0	Lactuca serriola	1
Lepidium perfoliatum	1	Medicago lupulina	0
Melilotus officinalis	1	Puccinellia nuttalliana	1
Ratibida columnifera	0	Rumex crispus	1
Sarcobatus vermiculatus	1	Sonchus arvensis	2
Thlaspi arvense	1	Trifolium pratense	1

Comments:

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

Species	Cover class	Species	Cover class
Algae, green	1	Alisma triviale	0
Alopecurus pratensis	0	Aquatic macrophytes	1
Bare Ground	1	Distichlis spicata	0
Eleocharis palustris	1	Glycyrrhiza lepidota	0
Hordeum jubatum	2	Mentha arvensis	0
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	Typha latifolia	0

Comments:

Community # 3 **Community Type:** Puccinellia nuttalliana / **Acres** 0.75

Species	Cover class	Species	Cover class
Agropyron cristatum	0	Asclepias speciosa	0
Bassia scoparia	0	Chenopodium album	1
Cirsium vulgare	0	Elaeagnus angustifolia	0
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
Medicago sativa	0	Melilotus albus	0
Melilotus officinalis	1	Melilotus sp.	0
Mentha arvensis	0	Pascopyrum smithii	0
Puccinellia nuttalliana	3	Ratibida columnifera	0
Rumex crispus	1	Schoenoplectus maritimus	0
Scirpus microcarpus	0	Solidago canadensis	0
Sonchus arvensis	1		

Comments:

Community # 4 **Community Type:** Alopecurus pratensis / **Acres** 0.89

Species	Cover class	Species	Cover class
Alisma triviale	0	Alopecurus pratensis	4
Asclepias speciosa	0	Carex stipata	0
Elymus trachycaulus	1	Glycyrrhiza lepidota	0
Melilotus officinalis	1	Mentha arvensis	0
Panicum capillare	0	Plantago major	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	0
Aquatic macrophytes	3	Melilotus albus	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
Typha latifolia	1		

Comments:

Total Vegetation Community Acreage **14.92**

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

VEGETATION TRANSECTS

Site: Dodson East Date: 8/5/2014 7:11:55 AM

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

Interval Data:

Ending Station 61 **Community Type:** Elymus spp. /

Species	Cover class	Species	Cover class
Agropyron cristatum	1	Bassia scoparia	1
Chenopodium album	1	Elymus trachycaulus	2
Hordeum jubatum	0	Iva axillaris	1
Lactuca serriola	1	Lepidium perfoliatum	2
Puccinellia nuttalliana	1	Rumex crispus	1

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

Species	Cover class	Species	Cover class
Chenopodium album	1	Elymus trachycaulus	1
Iva axillaris	1	Puccinellia nuttalliana	5
Rumex crispus	0		

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		

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

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

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

Species	Cover class	Species	Cover class
Algae, green	1	Alisma triviale	0
Aquatic macrophytes	5	Open Water	5
Schoenoplectus maritimus	0	Typha latifolia	0

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

Species	Cover class	Species	Cover class
Algae, green	1	Aquatic macrophytes	0
Open Water	4	Schoenoplectus maritimus	4
Sonchus arvensis	1	Spartina pectinata	1
Typha angustifolia	0		

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

Species	Cover class	Species	Cover class
Hordeum jubatum	1	Medicago sativa	3
Melilotus albus	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 Goldfinch	3	F	UP
Barn Swallow	1	FO	
Blue-winged Teal	19	F, L, N	MA, OW
Common Nighthawk	6	FO	UP
Double-crested Cormorant	2	F, L	OW
Eastern Kingbird	14	FO	UP, WM
Franklin's Gull	5	F, L	OW
Killdeer	2	F	MA, WM, US
Red-winged Blackbird	4	F, L	MA, OW, WM
Sandhill Crane	1	FO, L	OW, WM
Song Sparrow	6	FO	UP
Western Meadowlark	5	L	OW, WM
Wilson's Phalarope	2	F	OW
Yellow Warbler	4	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
Coyote		No	Yes	No	
Deer Sp.		Yes	No	No	
Northern Leopard Frog	1	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
3241-45	48.382328	-108.172241	135	PP4
3246-50	48.381828	-108.172661	45	PP3
3251-54	48.381191	-108.169777	270	PP2
3257	48.381973	-108.17041	225	T-1, start
3264	48.381413	-108.171402	30	T-1, end
3269-73	48.381931	-108.173218	315	PP5
3276	48.382538	-108.175163	15	T-2, end
3279-82	48.383743	-108.178741	90	PP7
3286	48.382935	-108.174904	195	T-2, start
3287-90	48.382549	-108.172798	225	PP6
3291	48.381996667	-108.17134667		DE-1w
3293	48.381927	-108.170967		DE-1u
3294-3301	48.381226	-108.168152	270	PP1

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: Phillips Co. Sampling Date: 8/5/2014

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

Investigator(s): B Sandefur Section, Township, Range: 2 20N 27E

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

Subregion (LRR): LRR F Lat: 48.381988 Long: -108.17271 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 ☐	Is the Sampled Area within a Wetland? Yes ☐ No ☑
Wetland Hydrology Present?	Yes ☐	No ☑	

Remarks: DP on slight rise between wetland cells.

VEGETATION - Use scientific names of plant

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Alopecurus pratensis	10	☐	FACW
Chenopodium album	70	☑	FACU
Elymus trachycaulus	5	☐	FACU
Hordeum jubatum	5	☐	FACW
Sonchus arvensis	10	☐	FAC

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground

Dominance Test worksheet

Number of Dominant Species that are OBL, FACW or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet

Total % Cover of:			Multiply by:
OBL species	0	X 1	0
FACW species	15	X 2	30
FAC species	10	X 3	30
FACU species	75	X 4	300
UPL species	0	X 5	0
Column Totals	100 (A)		360 (B)

Prevalence Index = B/A = 3.60

Hydrophytic Vegetation Indicators

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is <= 3.0
- ☐ 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants
- ☐ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☐ NO ☑

Remarks:

SOIL

Sampling Point: D-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
0-5	10YR 5/3	100					ery Fine Sandy Loar	
05-10	10YR 5/3	99					Clay	
10-16	10YR 5/2	97	10YR 4/4	3	C	M		

[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: Some salt concentrations in upper horizon, redox below 10in.

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: Assume seasonal high groundwater near to slightly below 1ft. Likely lacks continuous saturation of sufficient duration.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dodson East City/County: Phillips Co. Sampling Date: 8/5/2014

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

Investigator(s): B Sandefur Section, Township, Range: 2 30N 27E

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

Subregion (LRR): LRR F Lat: 48.382062 Long: -108.173021 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 ☐	Is the Sampled Area within a Wetland? Yes ☑ No ☐
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks:

VEGETATION - Use scientific names of plant

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Alopecurus pratensis	65	☑	FACW
Asclepias speciosa	5	☐	FAC
Mentha arvensis	20	☑	FACW
Sonchus arvensis	10	☐	FAC

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground

Dominance Test worksheet

Number of Dominant Species that are OBL, FACW or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet

Total % Cover of:			Multiply by:
OBL species	0	X 1	0
FACW species	85	X 2	170
FAC species	15	X 3	45
FACU species	0	X 4	0
UPL species	0	X 5	0
Column Totals	100 (A)		215 (B)

Prevalence Index = B/A = 2.15

Hydrophytic Vegetation Indicators

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is <= 3.0
- ☐ 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants
- ☐ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☑ NO ☐

Remarks:

SOIL

Sampling Point: D-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	10YR 4/1	95	10YR 4/6	5	C	M	Clay	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) **(LRR 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): _____

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: Area along terrace of ephemeral stream bisecting site. Evidence of high seasonal groundwater table based on presence of redox features.

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 8/5/2014 **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 8.41

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 8.41

☐ **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	30
Depressional	Aquatic Bed	Excavated	Permanent/Perennial	70

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 situated 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. An ephemeral 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		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		H	H	M	M	H			L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	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			.7M
Moderate	.9H	.7M	.5M	
Minimal	.6M		.2L	

Comments High-traffic area likely restricts wildlife usage, although box culverts under US Hwy 2 appear 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		.5M							.7M	.6M	.5M		.3L	.3L
FWP Tier II or Native Game fish species		.8H	.7M			.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M		.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M			.4M	.4M	.3L	.5M	.4M	.3L		.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M		.5M	.4M		.3L						.2L	.2L	.2L			.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**

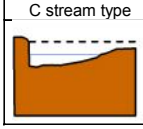
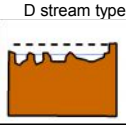
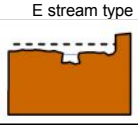
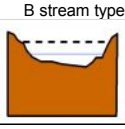
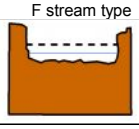
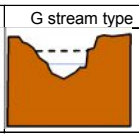
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ○ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

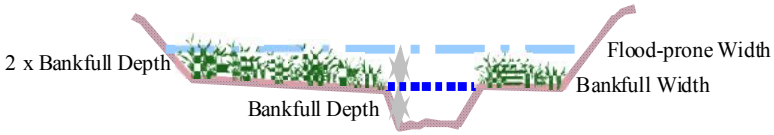
iii. Final Score and Rating: 0 NA **Comments:**

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
						



Floodprone 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%.

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:

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	4.205	☐
C. General Wildlife Habitat	M	.7	1	5.887	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.5	1	4.205	☐
F. Short and Long Term Surface Water Storage	H	1	1	8.41	☑
G. Sediment/Nutrient/Toxicant Removal	H	.9	1	7.569	☐
H. Sediment/Shoreline Stabilization	H	1	1	8.41	☑
I. Production Export/Food Chain Support	H	.8	1	6.728	☑
J. Groundwater Discharge/Recharge	H	1	1	8.41	☑
K. Uniqueness	L	.2	1	1.682	☐
L. Recreation/Education Potential (bonus points)	H	.15	NA	1.2615	☐
Totals:		6.75	10	56.7675	
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* **Location:** Looking west at mitigation site. **Bearing:** 270 Degrees **Taken in 2011**



Photo Point 1 – *Photo 1* **Location:** Looking west at mitigation site. **Bearing:** 270 Degrees **Taken in 2012**



Photo Point 1 – *Photo 1* **Location:** Looking west at mitigation site. **Bearing:** 270 Degrees **Taken in 2013**



Photo Point 1 – *Photo 1* **Location:** Looking west at mitigation site. **Bearing:** 270 Degrees **Taken in 2014**



Photo Point 2 – *Photo 1* **Location:** Looking west from east edge of east cell. **Bearing:** 270 degrees **Taken in 2011**



Photo Point 2 – *Photo 1* **Location:** Looking west from east edge of east cell. **Bearing:** 270 degrees **Taken in 2012**



Photo Point 2 – *Photo 1* **Location:** Looking west from east edge of east cell. **Bearing:** 270 degrees **Taken in 2013**



Photo Point 2 – *Photo 1* **Location:** Looking west from east edge of east cell. **Bearing:** 270 degrees **Taken in 2014**



Photo Point 3 – *Photo 1* **Location:** Looking northeast at east cell. **Bearing:** 45 degrees **Taken in 2011**



Photo Point 3 – *Photo 1* **Location:** Looking northeast at east cell. **Bearing:** 45 degrees **Taken in 2012**



Photo Point 3 – *Photo 1* **Location:** Looking northeast at east cell. **Bearing:** 45 degrees **Taken in 2013**



Photo Point 3 – *Photo 1* **Location:** Looking northeast at east cell. **Bearing:** 45 degrees **Taken in 2014**



Photo Point 4 – *Photo 1* **Location:** Looking southeast at east cell and Highway 2. **Bearing:** 135 Degrees **Taken in 2011**



Photo Point 4 – *Photo 1* **Location:** Looking southeast at east cell and Highway 2. **Bearing:** 135 Degrees **Taken in 2012**



Photo Point 4 – *Photo 1* **Location:** Looking southeast at east cell and Highway 2. **Bearing:** 135 Degrees **Taken in 2013**



Photo Point 4 – *Photo 1* **Location:** Looking southeast at east cell and Highway 2. **Bearing:** 135 Degrees **Taken in 2014**



Photo Point 5 – *Photo 1* **Location:** Looking northwest at west cell. **Bearing:** 315 Degrees **Taken in 2011**



Photo Point 5 – *Photo 1* **Location:** Looking northwest at west cell. **Bearing:** 315 Degrees **Taken in 2012**



Photo Point 5 – *Photo 1* **Location:** Looking northwest at west cell. **Bearing:** 315 Degrees **Taken in 2013**



Photo Point 5 – *Photo 1* **Location:** Looking northwest at west cell. **Bearing:** 315 Degrees **Taken in 2014**



Photo Point 6 – *Photo 1* **Location:** Looking southwest at west cell. **Bearing:** 225 Degrees **Taken in 2011**



Photo Point 6 – *Photo 1* **Location:** Looking southwest at west cell. **Bearing:** 225 Degrees **Taken in 2012**



Photo Point 6 – *Photo 1* **Location:** Looking southwest at west cell. **Bearing:** 225 Degrees **Taken in 2013**



Photo Point 6 – *Photo 1* **Location:** Looking southwest at west cell. **Bearing:** 225 Degrees **Taken in 2014**



Photo Point 7 – *Photo 1* **Location:** Looking east at west edge of west cell. **Bearing:** 90 Degrees **Taken in 2011**



Photo Point 7 – *Photo 1* **Location:** Looking east at west edge of west cell. **Bearing:** 90 Degrees **Taken in 2012**



Photo Point 7 – *Photo 1* **Location:** Looking east at west edge of west cell. **Bearing:** 90 Degrees **Taken in 2013**



Photo Point 7 – *Photo 1* **Location:** Looking east at west edge of west cell. **Bearing:** 90 Degrees **Taken in 2014**



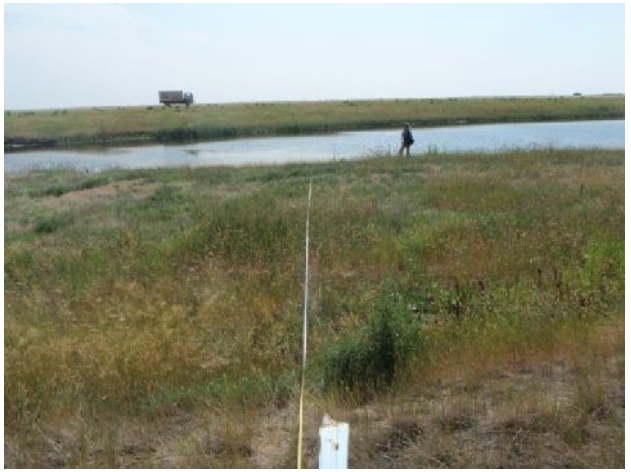
Transect 1 – Beginning
Bearing: 225 Degrees

Location: East cell (north).
Taken in 2011



Transect 1 – Beginning
Bearing: 225 Degrees

Location: East cell (north).
Taken in 2013



Transect 1 – Beginning
Bearing: 225 Degrees

Location: East cell (north).
Taken in 2014



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 2013



Transect 1 – *End*
Bearing: 30 Degrees

Location: East cell (south).
Taken in 2014



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 2013



Transect 2 – Beginning
Bearing: 195 Degrees

Location: West cell (north)
Taken in 2014



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 2013



Transect 2 – *End*
Bearing: 15 Degrees

Location: West cell (south)
Taken in 2014



Data Point – *DE-1w*
Bearing:
Location: Veg Comm 4
Taken in 2014

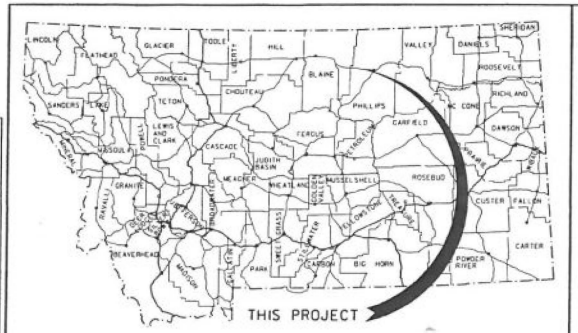


Data Point 2 – *DE-1u*
Bearing:
Location: Veg Comm 1
Taken in 2014

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

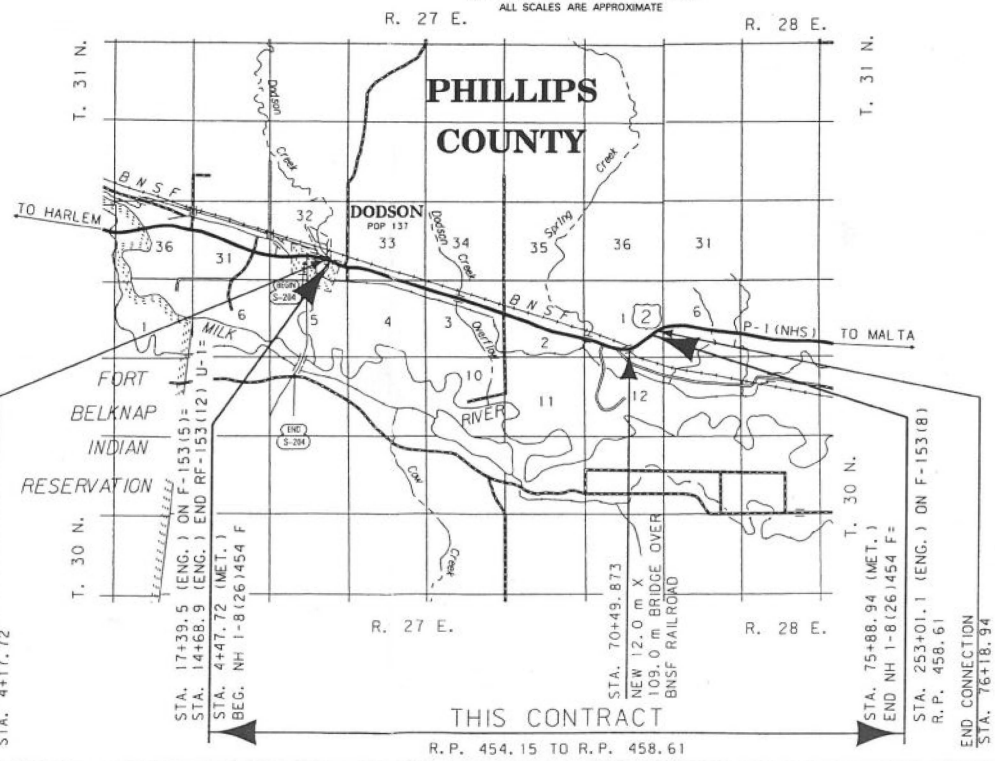
DESIGN DATA
2003 A.D.T. = 1160
2023 A.D.T. = 1410
D.H.V. = 180
D. = 55-45%
T. = 12.1%
V. = 110 km/h
80 kN ESAL'S = 115
GROWTH RATE = 1.0%

LETTING DATE – _____

LENGTH 7.1 kilometers

SCALES
VERTICAL: 1 : 100
HORIZONTAL: 1 : 1000
CROSS SECTION – HORIZONTAL & VERTICAL: 1 : 100
REDUCED PRINTS ONE-HALF ORIGINAL SCALE
ALL SCALES ARE APPROXIMATE

SURFACING SOURCES - CONTRACTOR FURNISHED



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, 20 06
JIM LYNCH
DIRECTOR OF TRANSPORTATION
BY _____
HIGHWAYS ENGINEER
PAUL R. FERRY 6425E PROFESSIONAL ENGINEER
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ADMINISTRATOR DATE

DESIGNED BY GLENDVE DISTRICT
DRAWN BY
CHECKED BY
QUANTITIES BY
DATE 11/15/2006 PW
1516\RD\1516lt.dgn
MONTANA DEPARTMENT OF TRANSPORTATION
MONTANA CADD

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	PIPE OPTIONS mm: 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 x 2400 mm r	meters RCB 4800 mm x 2400 mm r	END SECTIONS LEFT	END SECTIONS RIGHT	cubic meters CULVERT EXCAVATION *	cubic meters CLASS "OD" 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)

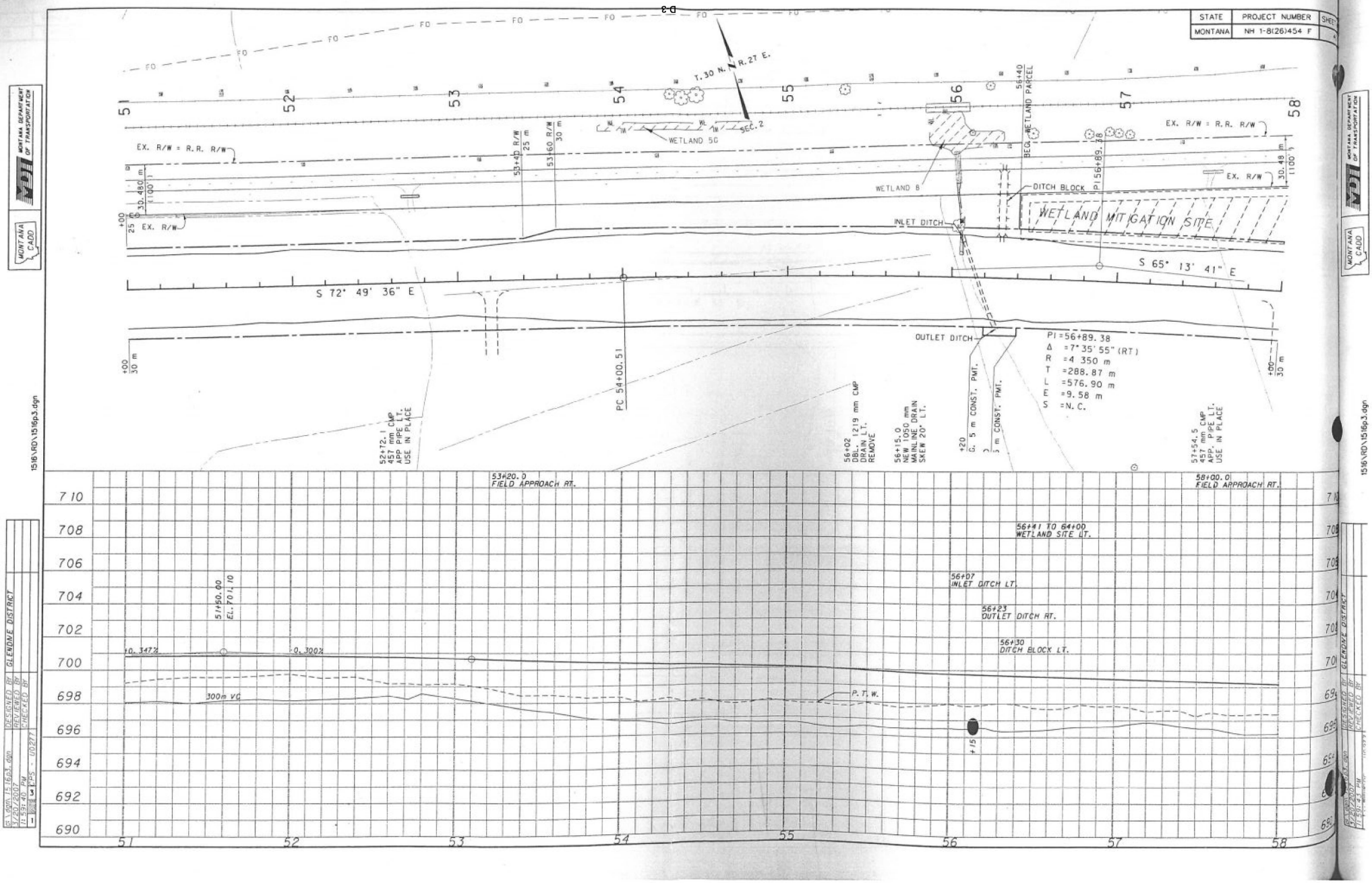
STATION FROM	STATION TO	LUMP SUM	FOR INFORMATIONAL PURPOSES ONLY: cubic meters EXCAVATION	cubic meters TOPSOIL SALVAGING AND PLACING	hectare SEEDING	meters FENCING FSM	meters GATES G2	each SINGLE PANEL	each DOUBLE PANEL	each DEADMAN	REMARKS
56+41.00	64+00.00	1	46 415	3 553	3.6	1 494.2	4.8	6	8	4	LT. OF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

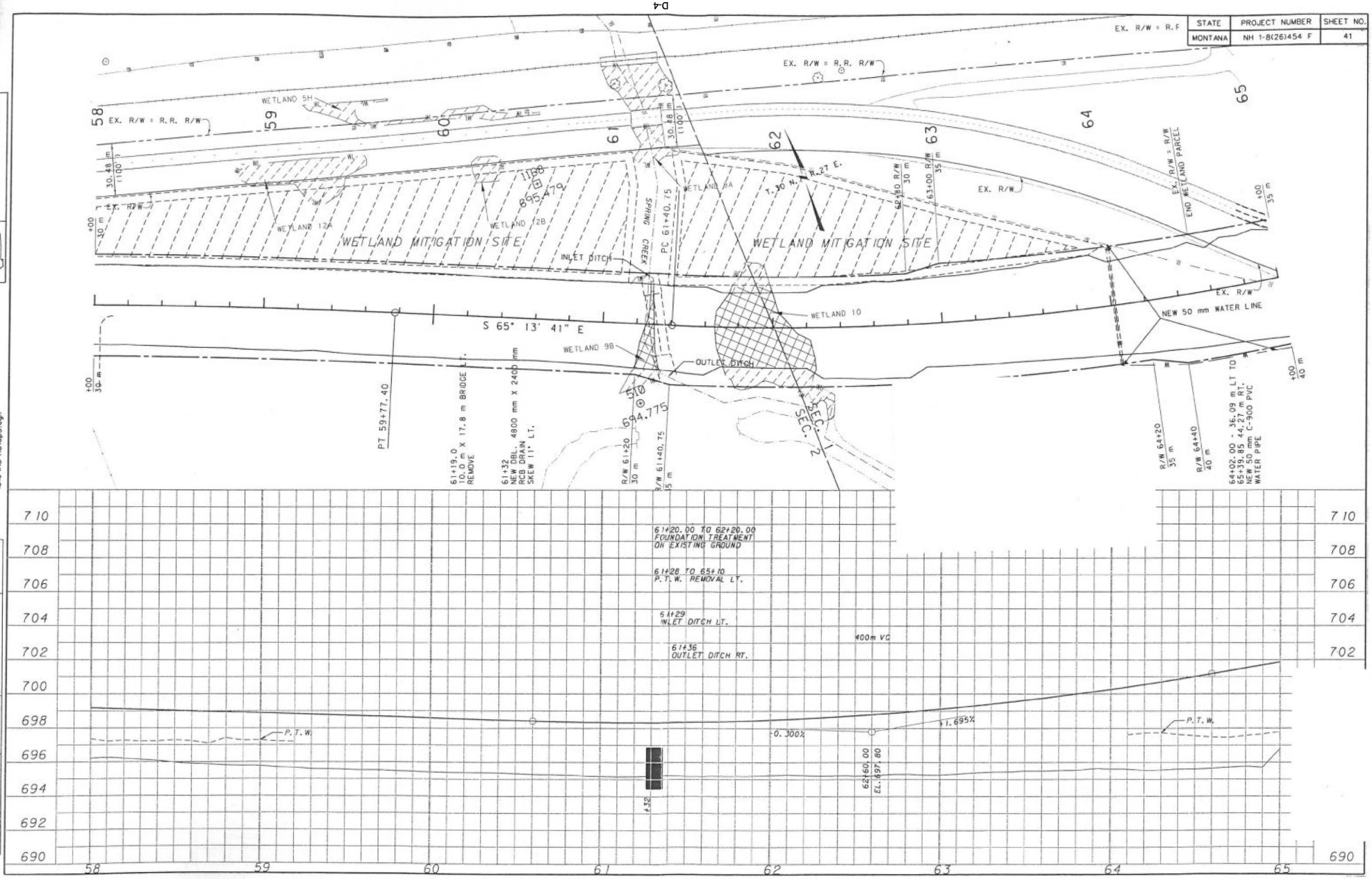
* COST FOR TRENCH BACKFILL IS INCLUDED IN RESPECTIVE PIPE COSTS.

MONTANA DEPARTMENT OF TRANSPORTATION
MONTANA CADD
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DESIGNED BY GLENDIVE DISTRICT
REVIEWED BY
CHECKED BY
PLOTTED BY
PLOT SCALE = 1.0000 '/ IN.
PLOT DATE = 5/20/2007



MONTANA DEPARTMENT OF TRANSPORTATION
MONTANA CADD
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GLENDIVE DISTRICT
DESIGNED BY
REVIEWED BY
CHECKED BY
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STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 1-8(26)454 F	41



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MONTANA DEPARTMENT OF TRANSPORTATION

MONTANA CADD

DESIGNED BY GLENDALE DISTRICT
REVIEWED BY
CHECKED BY

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

DETAIL

NEW WETLAND SITE

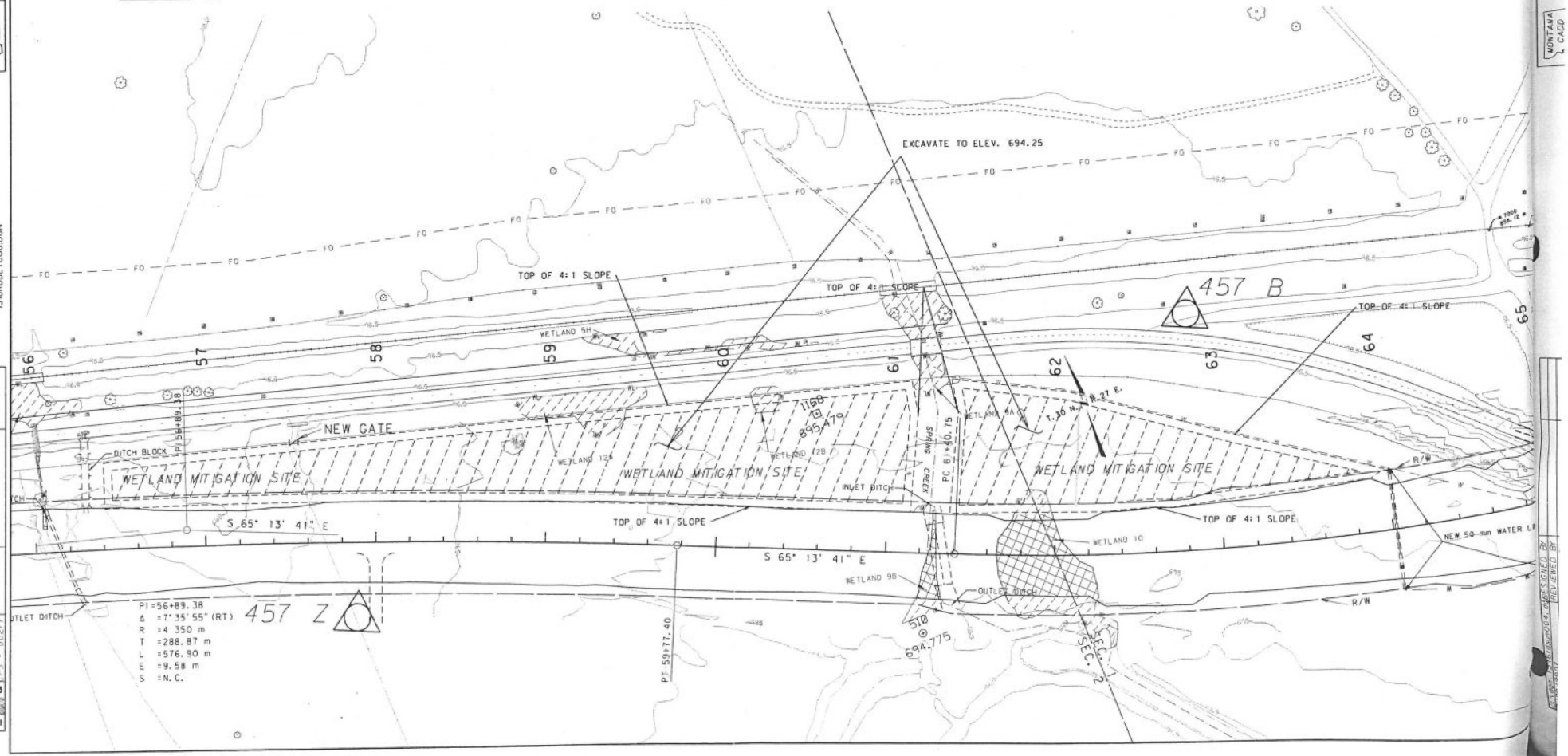
NO SCALE

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



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MONTANA DEPARTMENT OF TRANSPORTATION

MONTANA CADD