MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2014

Big Muddy Creek Roosevelt County, Montana



Prepared for:



December 2014

Prepared by:



MONTANA DEPARTMENT OF TRANSPORTATION

WETLAND MITIGATION MONITORING REPORT:

YEAR 2014

Big Muddy Creek
Roosevelt County, Montana
Constructed: 2011

MDT Project Number NH-1- (46) 633
Big Muddy Creek – West
Control Number 4058-001
&
MDT Project Number NH-1- (46) 626
Brockton - East
Control Number 4058

Prepared for:

MONTANA DEPARTMENT OF TRANSPORTATION 2701 Prospect Ave Helena, MT 59620-1001

Prepared by:

P.O. Box 1133
Bozeman, MT 59771

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CCI Project No: MDT.006

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Cover: View of inundated southwest cell in northern parcel of Big Muddy wetland site.



1. INTRODUCTION

The Big Muddy Creek Wetland Mitigation Site was completed in spring 2011. This report presents the results of the fourth year of post-construction monitoring at this mitigation area. This Montana Department of Transportation (MDT) wetland mitigation project is located four miles west of Culbertson, on US Highway 2, in Section 21, Township 28 North, Range 55 East, Roosevelt County, Montana (Figure 1). The overall size of the wetland mitigation site was modified in 2012 to provide compensatory mitigation for unavoidable impacts associated with the MDT Brockton – East project. The original mitigation area consisted of 10.62 acres located on the north side of Highway 2. An additional 7.25 acres located south of Highway 2 were added in 2012. The total mitigation area monitored since 2012 has been approximately 17.9 acres. The monitoring criteria and protocols contained in the wetland mitigation and monitoring plan submitted on April 12, 2010, remain as originally submitted and are discussed below.

Figures 2 and 3 in Appendix A show the 2014 Monitoring Activity Locations and Mapped Site Features, respectively. The MDT Mitigation Site Monitoring Form, US Army Corps of Engineers (USACE) Wetland Determination Data Forms for the Great Plains Region (USACE 2010), and the 2008 MDT Montana Wetland Assessment Forms (MWAM) (Berglund and McEldowney 2008) are included in Appendix B. Project site photographs are included in Appendix C and the Preliminary Design – Plan and Profile is provided in Appendix D.

The wetland mitigation site is situated within Watershed 12, the Lower Missouri River Basin. The MDT completed an initial feasibility study in August 2009. The MDT staff completed a baseline delineation and Montana Wetland Assessment in June 2010.

Approximately 0.73 acres of wetlands were delineated within the project boundary as part of the baseline assessment completed in June 2010. The wetlands encompassed an inundated, emergent marsh that extended from the banks of an unnamed tributary to Big Muddy Creek and a narrow emergent wet meadow that extended from the marsh into upland habitat.

The original mitigation goals were to create and preserve wetland habitat functions associated with riverine and emergent wetland on the Big Muddy Creek tributary floodplain. The project objectives for the northern tract include:

- Maximize the development of emergent and aquatic bed wetlands, general wildlife habitat, short and long-term surface water storage, sediment/nutrient/toxicant removal, and production export/food chain support.
- Create up to approximately 9.32 acres of wetland.



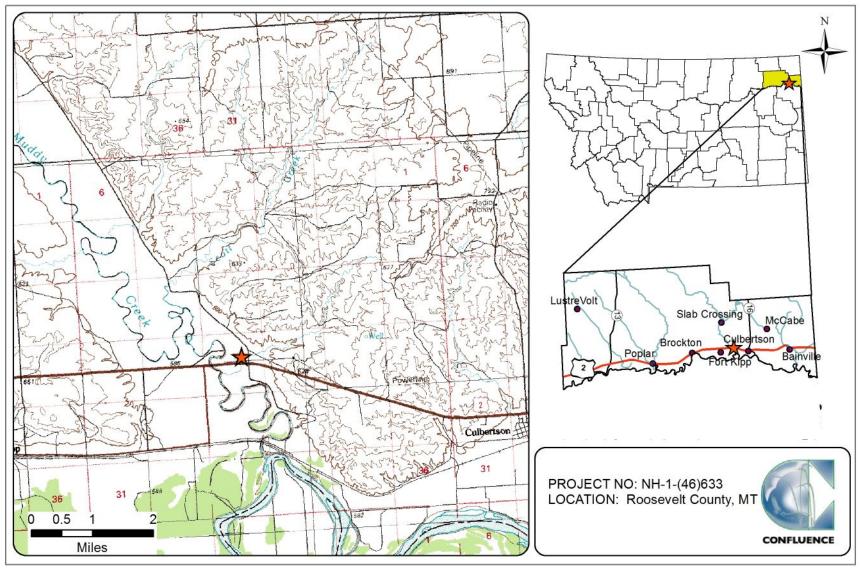


Figure 1. Project location of Big Muddy Creek Wetland Mitigation Site.



- Preserve approximately 0.73 acres of wetland through permanent protection and weed management.
- Preserve a protected, managed 0.43-acre upland buffer adjacent to site wetlands.
- Minimize site operation and maintenance requirements.

The original mitigation plan proposed the creation of 6.53 acres of emergent/aquatic bed shallow marsh within three wetland cells. The cells were to be excavated to intersect groundwater and provide water depths ranging from 0.5 to 2 feet. Additional hydrology was to be provided by direct precipitation and snowmelt.

Up to an additional 1.76 acres of emergent wetland were expected to form in the areas excavated between the three cells. The excavation was expected to facilitate saturation of the root zone via capillary action during spring and early summer of most years. The potential passive development of approximately 1.03 acres of emergent wet meadow located at the north boundary and adjacent to the existing wet meadow was to be facilitated by increasing and augmenting hydrology to the south within the excavated cells.

The monitoring area was increased in 2012 to include an additional 7.25-acre parcel located to the south of US Hwy 2. This revised mitigation area was incorporated into the original mitigation plan to include the unavoidable wetland impacts associated with MDT Brockton – East project. This revision included the construction of a 5.47-acre wetland depression in 2011 along the floodplain of an unnamed tributary to Big Muddy Creek in an area delineated as upland in April 2010. Based on an MDT letter to Todd Tillinger dated June 14, 2010, this revision was a clerical and a mathematical revision based on the MDT decision to let the MDT Brockton – East and Big Muddy Creek – West projects proceed at the same time and to construct them concurrently. A 1.83-acre pre-existing wetland was located in the additional monitoring area and was included in the preservation credit category in 2012.

The performance standards for each mitigation feature are included in Table 7 of Section 3.9. The project credit ratios approved by the USACE and presented in the 2011 Mitigation Plan are also shown on Table 7.

2. METHODS

A monitoring site visit was performed on June 26, 2014. Information for the Mitigation Monitoring Form and Wetland Determination Data Forms was entered in the field on an electronic tablet during the site investigation (Appendix B). Monitoring activity sites, located with a global positioning system (GPS), are shown on Figure 2 (Appendix A). Information included completion of a wetland delineation, vegetation community mapping, vegetation transect monitoring, soil and hydrology data collection, bird and wildlife use, photo documentation, and a



non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

The presence of hydrological indicators as outlined on the Wetland Determination Data Form was assessed at four 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 Form (Appendix B). Onsite hydrologic assessments allow evaluation of mitigation goals addressing inundation/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 considered wetlands. The growing season is approximated 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 predominant soil map units, Havrelon loam and Lohler silty clay, averages 113 days (USDA 2011). Areas defined as wetlands would require 14 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 the dominant, species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2014 aerial photograph. Percent cover of the dominant species within a community type was estimated and recorded using the following values: 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) (Appendix B). Community types were named based on the predominant vegetation species that characterized each mapped polygon (Figure 3, Appendix A).

Temporal changes in vegetation were evaluated through annual assessments of a static belt transect established in August 2011 and a transect added in 2012 (Figure 2, Appendix A). Vegetation composition was assessed and recorded along two approximately 10 feet wide belt transects, 647 feet long (T-1) and 366 feet long (T-2) (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 transects. The percent aerial cover of each vegetation species within the belt transects were estimated using the same values and cover ranges used for the polygon data on the 2014 aerial



photograph (Figure 3, Appendix B). Photographs were taken at the endpoints of the transects 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 on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "x", "▲", or "■" representing 0 to 0.1 acre, 0.1 to 1 acre, or greater than 1 acre in extent, respectively. Cover classes are 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 from the *Soil Survey for Roosevelt County Area* (USDA 2011) and *in situ* soil descriptions. Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the 1987 Manual and 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2010). 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 US including special aquatic sites and jurisdictional wetlands were delineated throughout the project area in accordance with criteria established in the 1987 Manual and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2010). 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). 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 as documented 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. The wetland boundary was surveyed with GPS and is presented on the 2014 aerial imagery in Geographic Information System (GIS) format. Wetland acreages were estimated using GIS methods.



2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the Mitigation Monitoring Form during the site visit. Indirect use indicators, including tracks, scat, burrow, eggshells, skins, and bones, were also recorded. 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 animals observed from 2011 through 2014 was compiled for this report.

2.6. Functional Assessment

The 2008 MDT MWAM 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. A Wetland Assessment Form was completed for four assessment areas (AA), the created wetlands (North/South) and the existing wetlands (Appendix B).

2.7. Photo Documentation

Monitoring at photo points provides supplemental information documenting conditions of the site wetlands, uplands, and vegetation transects; site trends; and current land uses surrounding the project. Photographs were taken in 2014 at photo points established in 2011 and 2012 during the site visit (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 fence boundaries, photograph points, transect endpoints, wetland/upland boundary and wetland data points.

2.9. Maintenance Needs

Channels, engineered structures, fencing, birdboxes and other features, if present, 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 Culbertson Coop, Montana (242122), recorded an average annual precipitation rate of 13.61 inches from December 1900 to December 2013 (WRCC 2014). The annual precipitation recorded in 2010, 2011, 2012, and 2013 was 20.53 inches, 17.43 inches, 12.44 inches, and 19.82 inches, respectively. The total precipitation from January to August 31 was 10.64 inches (long-term average), 16.77 inches (2010), 15.39 inches (2011), 8.98 inches (2012), 11.25 inches (2013), and 10.73 inches (2014). These data suggest the region received above-average precipitation in 2010 and 2011, and near-average precipitation in 2012, 2013, and 2014. Precipitation and infrequent flooding of the unnamed tributary of Big Muddy Creek drive hydrology at the Big Muddy wetland mitigation site. Site-wide inundation and saturation levels were generally lower in 2012, 2013, and 2014 than observed within the north parcel in 2010 and the north and south parcels in 2011.

Approximately 15 percent of the entire site was inundated in during the 2014 field survey, which included approximately 25% of the northern site and less than one percent of the southern tract. The depth of water within the northern tract averaged 0.6 foot with surface water depths up to 1.3 feet. Many areas defined as wetlands across both sides of the mitigation area were not inundated but exhibited periodic saturation within 12 inches (1.0 foot) of the ground. Other signs of hydrology included water marks, water-stained leaves, aquatic invertebrates, inundation and saturation visible on aerial imagery, and/or surface soil cracks. Both the north and south tracts receive periodic overbank flow from the unnamed tributary during spring flows. The constructed wetlands and adjacent stream are hydrologically connected via groundwater. The constructed depressions in the northern tract exhibit periodic to permanent inundation. The north cell in the north parcel and the cell in the south parcel were dry at the time of the June 2014 survey.

Four data points, BM-1w, BM-2w, BM-3w, and BM-3u, were sampled to determine the wetland and upland boundaries. Data points BM-1w, BM-2w, and BM-3w were located in areas that met the wetland criteria. BM-1w was located in the excavated depression characterized by Community 11 and BM-2w was located outside the edge of the south wetland cell. Test pit BM-3w was located in the fringe surrounding the north excavated depressions. Evidence of positive wetland hydrology at BM-1w included water-stained leaves and surface soil cracks. Wetland hydrology at BM-2w appeared to be supported by periodic endo-saturation from seasonally high groundwater. Surface soil cracks were also observed. Data point BM-3w exhibited an algal mat or crust, a salt crust, surface soil cracks, and saturation visible on aerial imagery. A single secondary indicator, surface soil cracks, was noted at data point BM-1u, located in upland community Type 8.



3.2. Vegetation

Monitoring year 2014 marked the fourth year of post-construction monitoring at the Big Muddy Creek wetland mitigation site. Sixty-two plant species were 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 nine communities identified in 2014 and complete lists of the associated species are included on the Monitoring Form in Appendix B and the mapped communities shown on Figure 3 in Appendix A.

Table 1. Vegetation species observed from 2011 thru 2014 at the Big Muddy Wetland Mitigation Site.

		GP Indicator
Scientific Names	Common Names	Status ¹
Achillea millefolium	Common Yarrow	FACU
Agropyron cristatum	Crested Wheatgrass	NL
Algae, green	Algae, green	NL
Artemisia cana	Coaltown Sagebrush	FACU
Artemisia frigida	Fringed Sage	NL
Artemisia tridentata	Big Sagebrush	NL
Aster sp.	Aster	NL
Atriplex suckleyi	Suckley's Saltbush	NL
Bassia scoparia	Mexican-Fireweed	FACU
Bouteloua dactyloides	Buffalo Grass	FACU
Bouteloua gracilis	Blue Gramma	NL
Bromus inermis	Smooth Brome	UPL
Carex aquatilis	Leafy Tussock Sedge	OBL
Chenopodium album	Lamb's-Quarters	FACU
Cirsium arvense	Canadian Thistle	FACU
Distichlis spicata	Coastal Salt Grass	FACW
Eleocharis palustris	Common Spike-Rush	OBL
Elymus lanceolatus	Streamside Wild Rye	FACU
Elymus repens	Creeping Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Equisetum arvense	Field Horsetail	FAC
Fraxinus pennsylvanica	Green Ash	FAC
Glycyrrhiza lepidota	American Licorice	FACU
Grindelia squarrosa	Curly-Cup Gumweed	UPL
Helianthus annuus	Common Sunflower	FACU
Hordeum jubatum	Fox-Tail Barley	FACW
Iva axillaris	Deer-Root	FAC
Juncus balticus	Baltic Rush	FACW
Lactuca serriola	Prickly Lettuce	FAC
Lemna minor	Common Duckweed	OBL
Lepidium perfoliatum	Clasping Pepperwort	FAC
Linum lewisii	Prairie Flax	NL
Lycopus americanus	Cut-Leaf Water-Horehound	OBL

¹2014 NWPL (Lichvar et al., 2014).

New species identified in 2014 are bolded.



Table 1. (Continued). Vegetation species observed from 2011 thru 2014 at the Big Muddy Wetland Mitigation Site

Scientific Names	Common Names	GP Indicator
Scientific Names	Common Names	Status ¹
Medicago sativa	Alfalfa	UPL
Melilotus officinalis	Yellow Sweet-Clover	FACU
Mentha arvensis	American Wild Mint	FACW
Open Water	Open Water	NL
Opuntia polyacantha	Plains Pricklypear	NL
Pascopyrum smithii	Western-Wheat Grass	FACU
Poa arida	Prairie Blue Grass	FAC
Poa pratensis	Kentucky Blue Grass	FACU
Polypogon monspeliensis	Annual Rabbit's-Foot Grass	FACW
Populus deltoides	Eastern Cottonwood	FAC
Populus tremuloides	Quaking Aspen	FAC
Potentilla anserina	Silverweed	FACW
Puccinellia nuttalliana	Nuttall's Alkali Grass	OBL
Rosa woodsii	Woods' Rose	FACU
Rumex crispus	Curly Dock	FAC
Salix amygdaloides	Peach-Leaf Willow	FACW
Schoenoplectus acutus	Hard-Stem Club-Rush	OBL
Schoenoplectus americanus	Chairmaker's Club-Rush	OBL
Schoenoplectus maritimus	Saltmarsh Club-Rush	OBL
Schoenoplectus pungens	Three-Square	OBL
Scutellaria galericulata	Hooded Skullcap	OBL
Sonchus arvensis	Field Sow-Thistle	FAC
Spartina pectinata	Freshwater Cord Grass	FACW
Suaeda calceoliformis	Paiuteweed	FACW
Symphoricarpos albus	Common Snowberry	UPL
Symphyotrichum laeve	Smooth Blue American-Aster	FACU
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	FACU
Tragopogon dubius	Meadow Goat's-beard	NL
Typha latifolia	Broad-Leaf Cat-Tail	OBL

¹2014 NWPL (Lichvar et al, 2014).

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

The four vegetation communities identified on the north parcel in 2013 remained the same in 2014 and included three wetland types and one upland type. The wetland communities were wetland Type 3 – *Schoenoplectus* spp.; wetland Type 4 – *Spartina pectinata/ Schoenoplectus* spp.; and wetland Type 9 – *Puccinellia nuttalliana/Iva axillaris*. Upland community Type 8 – *Bromus inermis/Agropyron cristatum* defined the drier areas bordering the excavated depressions. The north cell on the north parcel was dry during the June 2014 monitoring event. Wetland community Type 15 – Bare ground/*Schoenoplectus* spp. (Mudflat) was created to reflect the change in cover in 2014. The open water present in the south cells of the north parcel were represented by polygon 6 on Figure 3 (Appendix A).



Wetland Type 10 – *Puccinellia nuttalliana/Typha latifolia* was identified in 2013 within the excavated area south of Highway 2 and was changed in 2014 to wetland Type 11 *Puccinellia nuttalliana/Hordeum jubatum* to represent the shift in vegetation cover from a dominance of broad-leaf cat-tail to fox-tail barley. Wetland Type 12 - *Puccinellia nuttalliana/Iva axillaris* was observed in the north edge of the south parcel in 2014. Wetland Type 13 – *Spartina pectinata* was created to characterize the existing wetland edge west of the excavated depression on the south parcel. Upland community Type 14 – *Agropyrum cristatum/Bromus inermis* represents the dry southeast edge of the excavated depression on the south parcel. No open water was observed in the depression located on the south parcel in 2014.

Upland community Type 1 - Elymus spp. and upland Type 2 - Chenopodium album were replaced in 2013 by Wetland community Type 3 - Schoenoplectus spp. The community was identified on 1.18 acres of the north site in 2014 and generally included the seeded emergent community found along the margins of the open water boundary in the constructed cells. The community acreage represented an increase of 0.13 acre since 2013. Approximately 6 to 10 percent of the ground surface in the community was bare. The cover of desirable hydrophytic species increased and the amount of bare ground decreased from 2012 to 2014. Dominant species included saltmarsh club-rush (Schoenoplectus maritimus, called Scirpus maritimus on 1988 list), hard-stem club-rush (Schoenoplectus acutus, called Scirpus acutus on 1988 list), Chairmaker's clubrush (Schoenoplectus americanus, called Olney's bulrush, Scirpus americanus on 1988 list), coastal saltgrass (Distichlis spicata), broad-leaf cat-tail (Typha latifolia), and lamb's-quarters (Chenopodium album). This community is expected to continue to expand in size and may eventually dominate the open water areas.

Wetland community Type 4 — Spartina pectinata/Schoenoplectus spp. characterized 0.78 acres of the pre-existing wetland community associated with the unnamed tributary to Big Muddy Creek that parallels the west and north boundaries of the north parcel. The size of the community decreased by 0.37 acre from 2013 to 2014. The dominant species in this community was freshwater cord grass (Spartina pectinata). Hard-stem club-rush, saltmarsh club-rush, broad-leaf cattail, curly dock (Rumex crispus), leafy tussock sedge (Carex aquatilis), and common duckweed (Lemna minor) were additional components of the vegetation community. The community contained inundated areas with water levels ranging from one to two feet deep.

Wetland community Type 9 – *Puccinellia nutalliana/Iva axillaris* (N) was identified on 2.55 acres of wetland located within the excavated areas between the constructed cells on the north side of Highway 2. The 1.25-acre decrease delineated in 2014 is the result of adding a new plant community in the southern parcel, wetland Type 12, to characterize the area north of the single excavated cell. The vegetation cover within Type 9 was dominated by Nuttall's alkali grass



and deer-root (*Iva axillaris*), combined with less than 10 percent cover of 21 species including Baltic rush (*Juncus balticus*), coastal salt grass, curly cup gumweed (*Grindelia squarrosa*), Western wheatgrass (*Pascopyrum smithii*), and freshwater cordgrass. Approximately 11 to 20 percent of the ground surface within the community was bare. An area of native recruitment of eastern cottonwood, willows, and quaking aspen seedlings was identified along the eastern boundary of this community. Wetland Type 5, *Puccinellia nutalliana/Chenopodium album* was replaced by wetland Type 9 in 2013 based on the increase in the cover of *P. nutalliana* and the decrease in the cover of *C. album*.

Wetland Community Type 11 - Puccinellia nutalliana/Hordeum jubatum, newly defined in 2014, characterized the 4.38 acre wetland depression constructed south of the highway. These wetland depressions were designed to be seasonally inundated similar to prairie potholes. As such, the plant community is expected to change periodically in response to fluctuating hydrology. There was an apparent lack of sufficient hydrology in 2014 to support obligate hydrophytes such as broad-leaf cat-tail. Dominant species in 2014 included Nuttall's alkaligrass. barley, lamb's-quarters, and piuteweed (Suaeda fox-tail calceoliformis). There were 8 other species identified at less than 5 percent cover including saltmarsh club-rush, hard-stem club-rush, freshwater cord grass, and broad-leaf cat-tail. The depression was dry during the June 2014 monitoring event.

Wetland Community Type 12 – *Puccinellia nutalliana/Iva axillaris* (S) was added in 2014 to represent the 1.25-acre area located north and northeast of the constructed cell on the south parcel. The dominant species were Nuttall's alkaligrass, deer root, and lamb's-quarters. The area is primarily vegetated with non-seeded, invasive species except for Nuttall's alkaligrass. Precipitation totals from 2012, when the cell was constructed, to the present have been near-average creating slightly drier regional conditions than 2010 and 2011. This factor likely affected the germination success in the seeded areas.

Wetland Community Type 13 – *Spartina pectinata* defines the 0.37-acre existing wetland area west of the excavated depression on the south parcel. The cover is dominated by freshwater cordgrass, common snowberry (*Symphoricarpos albus*), lamb's-quarters, hooded skullcap (*Scutellaria galericulata*), deer root, and Wood's rose (*Rosa woodsii*).

Wetland Community Type 15 – Bare Ground/Schoenoplectus spp. was observed in 2014 in the 0.84-acre north cell of the north parcel. Less than five percent of the community was inundated during the June 2014 monitoring event although several indicators of wetland hydrology provided evidence that the extent of inundation was greater during the early growing season. More than 50 percent of the excavated depression was bare ground. Salt marsh club-rush, hard-stem club-rush, common spikerush (*Eleocharis palustris*), curly dock (*Rumex crispus*),



coastal saltgrass, fox-tail barley, and Nuttall's alkali grass were present at less than five percent. The community has been identified as mudflat on the Transect 1 intervals.

Upland Community Type 8 – *Bromus inermis/Agropyron cristatum* was identified on 2.37 acres of the perimeter of the north parcel, upslope from the constructed wetland cells. The 1.25-acre decrease in the extent of this community from 2013 to 2014 was the result of creating a new community, Type 14, to define the upland areas on the south parcel. The cover consisted of existing and seeded herbaceous species. Smooth brome (*Bromus inermis*), crested wheatgrass (*Agropyron cristatum*), Nuttall's alkali grass (21 to 50 percent of community), curly-cup gumweed), Kentucky bluegrass (*Poa pratensis*), and creeping wild rye (*Elymus repens*).

Upland Community Type 14 – *Agropyron cristatum/Bromus inermis* was observed in 2014 in the 1.25-acre upland located south and east of the constructed cell on the south parcel. Dominant species included crested wheatgrass, smooth brome, and fringed sage (*Artemisia frigida*).

Approximately 2.91 acres of the two wetland cells in the south half of the north parcel were inundated in 2014. The total acreage reflected a decrease of 0.96 acres of open water (identified as Polygon 6 in Figure 3, Appendix A) from 2013 to 2014. There was also a decrease of 1.17 acres of open water from 2012 to 2013. The reductions in the extent of inundation are likely the result of lower precipitation totals from 2012 to 2014 as compared to the 2010 and 2011 annual precipitation totals. The rate of aquatic bed development in the open water areas of the excavated depressions is likely limited by the intermittent water regime and high turbidity produced by wave-action along the unconsolidated clay shoreline. The accumulation of salts within the soil's rooting zone along the normally endo-saturated shoreline may also be a factor in vegetation development.

Vegetation community transitions were measured on a 647-foot transect (T-1) for the north half of the mitigation site and on a 366-foot transect (T-2) for the south half of the site. Transect one (T-1) intersected four vegetation communities, wetland Types 3, 9, and 15 and upland Type 8 (Table 2 and Chart 1). Approximately 20.1 percent of Transect 1 crossed open water in the constructed cells, down from 32.1 percent in 2013. Hydrophytic vegetation was identified on 51.6 percent of the transect, up slightly from 49.8 percent in 2013. The most notable change from 2013 to 2014 was the decrease in the extent of open water within the north cell. Approximately 10.2 percent of the transect was defined as mudflat. Although the mud flat interval exhibited mostly bare substrate, sprouts of *Schoenoplectus* spp. were present around the margins of this mudflat. The vegetation community transition is illustrated on Charts 1 and 2. The percent of upland plant communities on the transect decreased from 30.1 percent to 18.1



percent from 2012 to 2013 and 2014 reflecting the transition from upland to wetland vegetation cover.

Transect 2 was added in 2012 to monitor the additional mitigation area to the south of Highway 2 and was established across the excavated basin constructed in 2011. Transect 2 intersected wetland community Types 11 and 13, and upland community Type 14. Approximately 91.8 percent of the transect was dominated by hydrophytic species, the same as in 2013 (Table 3 and Charts 3 and 4). Nuttall's alkali grass remained the dominant species within the wetland cell south of the highway in 2014. The percent of upland versus wetland communities on the transect remained consistent between 2012 and 2014, primarily the result of the abrupt topographic transition into wetland.

Table 2. Data summary for Transect 1 (North Parcel) from 2011 thru 2014 at the Big Muddy Wetland Mitigation Site.

Monitoring Year	2011	2012	2013	2014
Transect Length (feet)	647	647	647	647
Vegetation Community Transitions along Transect	11	11	11	11
Vegetation Communities along Transect	4	4	3	4
Hydrophytic Vegetation Communities along Transect	2	2	2	2
Total Vegetative Species	21	24	20	25
Total Hydrophytic Species	12	11	9	10
Total Upland Species	9	13	11	15
Estimated % Total Vegetative Cover	40	50	70	70
Estimated % Unvegetated	60	50	30	30
% Transect Length Comprising Hydrophytic Vegetation Communities	20.7	32.1	49.8	51.6
% Transect Length Comprising Upland Vegetation Communities	29.8	30.1	18.1	18.1
% Transect Length Comprising Unvegetated Open Water	49.5	37.7	32.1	20.1
% Transect Length Comprising Mudflat	0.0	0.0	0.0	10.2

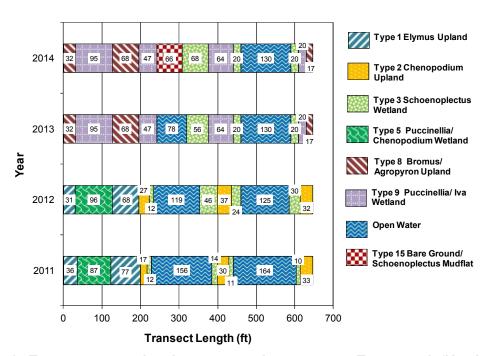


Chart 1. Transect map showing community types on Transect 1 (North Parcel) from 2011 thru 2014 from start to finish at the Big Muddy Wetland Mitigation Site.



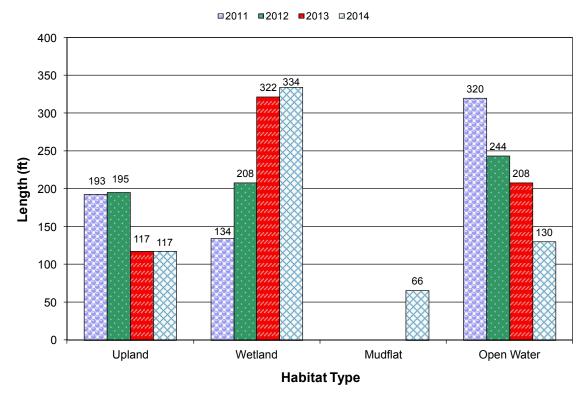


Chart 2. Length of habitat types within Transect 1 (North Parcel) from 2011 thru 2014 at the Big Muddy Wetland Mitigation Site.

Table 3. Data summary for Transect 2 (South Parcel) from 2012 thru 2014 at the Big Muddy Wetland Mitigation Site.

Monitoring Year	2012	2013	2014
Transect Length (feet)	366	366	366
Vegetation Community Transitions along Transect	2	2	2
Vegetation Communities along Transect	3	3	3
Hydrophytic Vegetation Communities along Transect	2	2	2
Total Vegetative Species	21	18	17
Total Hydrophytic Species	11	10	7
Total Upland Species	10	8	10
Estimated % Total Vegetative Cover	90	95	95
Estimated % Unvegetated	10	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	91.3	91.8	91.8
% Transect Length Comprising Upland Vegetation Communities	8.7	8.2	8.2
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0
% Transect Length Comprising Mudflat	0.0	0.0	0



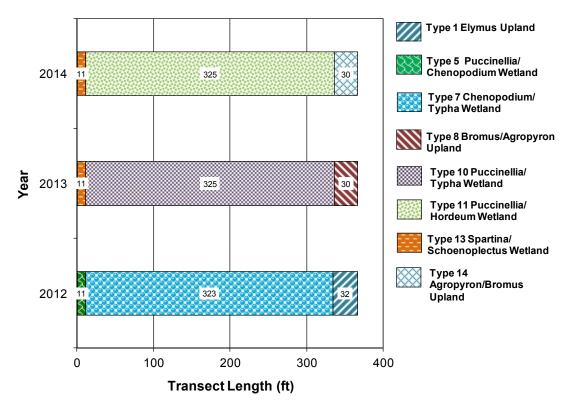


Chart 3. Transect map showing community types on Transect 2 (South Parcel) from 2012 thru 2014 from start to finish at the Big Muddy Wetland Mitigation Site.

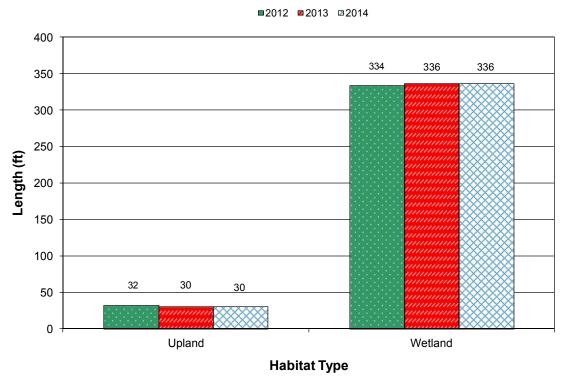


Chart 4. Length of habitat types within Transect 2 (South Parcel) in 2012, 2013, and 2014 at the Big Muddy Wetland Mitigation Site.



One infestation of Canadian thistle (*Cirsium arvense*), a Priority 2B weed, was observed at the northeast edge of the unnamed tributary on the north parcel. The infestation covered less than 0.1 acre with a moderate cover class of 5 to 25 percent. The MDT has an ongoing weed control program for their mitigation sites that includes an annual assessment of weeds at each site. No woody species were installed on this site. Native recruitment of eastern cottonwood, willows, and quaking aspen seedlings was identified within community 9 in the northern parcel in 2013 and 2014.

3.3. Soil

The project site was mapped in the Roosevelt County Soil Survey (USDA 2011). Three soil series were mapped within the monitoring area and include the Havrelon loam, Lallie silty clay, and Lohler silty clay. The Havrelon loam was mapped primarily in the pre-existing wetland areas in the north parcel. This series is a moderately well drained loam, taxonomically classified as a frigid Typic Ustifluvents. The Haverlon series is found on floodplains of major streams and tributaries. The Lohler silty clay is a slowly permeable soil, taxonomically classified as a frigid Vertic Ustifluvents and mapped across the majority of both monitoring parcels. This soil is mainly found on floodplains. The Lallie series consist of very deep, poorly drained, slowly permeable soils formed in lake basins and old oxbows. It was mapped along the west boundary of the site surrounding the unnamed tributary of Big Muddy Creek. The three soil map units are included on the Montana Hydric Soils list.

Four soil pits were excavated to characterize onsite soil. Data points BM-1w, BM-2w, and BM-3w were located in areas that met the wetland criteria. The soil profile at BM-1w revealed a dark gray (10 YR 4/1) clay with 5 percent dark yellowish brown (10 YR 4/6) redoximorphic concentrations in the matrix. The profile at BM-2w was a gray (10YR 5/1) clay with 5 percent brown (7.5 YR 4/4) redox concentrations. The soil in test pit BM-3w was a grayish brown (10YR 5/2) sandy clay with strong brown (7.5YR 4/6) redox concentrations. The depleted matrices were positive indicators of hydric soil at these three wetland data points. Data point BM-1u was located in the upland area characterized as Community 8. The soil in this test pit BM-1u was a yellowish brown (10 YR 5/4) silty clay loam without redox features. The data point did not meet the wetland criteria for hydric soil.

3.4. Wetland Delineation

Two data points were located within the north mitigation parcel and two data points were located in the south mitigation parcel in 2014 to help define the wetland boundaries (Figure 2, Appendix A, and Wetland Determination Data Forms, Appendix B). The 2014 wetland delineation identified a total of 14.25 acres of wetland/aquatic habitat, the same as delineated in 2013 (Table 4). Table 4 shows the extent of habitat in the north parcel shifting by 0.96 acres in 2014, corresponding to the temporal change from open water habitat to mud flat habitat within the excavated depression. A portion of the area between the excavated cells in the north parcel was characterized by community 9,



representing an expansion of wetland into the areas between the cells. The acreage of the pre-existing wetlands, represented by Types 4 and 13, remained unchanged at 2.56 acres in 2014. A total of 8.25 acres of wetland habitat was identified within the north parcel in 2013 and 2014, an increase from 6.92 acres delineated in 2012. Within the south parcel, there were a total of 6.00 acres of wetland and aquatic habitat delineated.

Table 4. Total wetland acres delineated from 2011 thru 2014 at the Big Muddy Wetland Mitigation Site.

Wetland and Aquatic Habitat	2011	2012	2013	2014
Wetiand and Aquatic Habitat	(acres)	(acres)	(acres)	(acres)
Created Wetland - North Parcel	1.14	1.14	3.65	4.61
Pre-Existing Wetland - North Parcel	0.73	0.73	0.73	0.73
Open Water - North Parcel	5.05	5.05	3.87	2.91
Sub-Total for North Parcel	6.92	6.92	8.25	8.25
Created Wetland - South Parcel		4.11	4.17	4.17
Pre-Existing Wetland - South Parcel		1.83	1.83	1.83
Open Water - South Parcel		0.00	0.00	0.00
Sub-Total for South Parcel		5.94	6.00	6.00
Total	6.92	12.87	14.25	14.25

3.5. Wildlife

A comprehensive list of birds and other wildlife species observed directly or indirectly from 2011 through 2014 is presented in Table 5 (Monitoring Form, Appendix B). The ten bird species observed by Confluence biologists during the 2014 monitoring event are listed in bold type on Table 5. Observations on the number, behavior, and habitat of the birds are detailed on the Mitigation Monitoring Form (Appendix B). Three northern leopard frogs (*Rana pipiens*), one prairie rattlesnake (*Crotalus viridus*), and deer (*Odocoileus* sp.) and red fox (*Vulpus vulpus*) tracks were observed during the site review.



Table 5. Wildlife species observed within the Big Muddy Wetland Mitigation Site from 2011 thru 2014.

COMMON NAME	SCIENTIFIC NAME
АМРНІ	BIANS
Boreal Chorus Frog	Pseudacris maculata
Northern Leopard Frog Woodhouse's Toad	Rana pipiens
Woodhouse's Toad	Bufo woodhousii
MAMI	MALS
Deer Sp.	Odocoileus sp.
Muskrat	Ondatra zibethicus
Raccoon	Procyon lotor
Red Fox	Vulpes vulpes
REP	TILE
Plains Gartersnake*	Thamnophis radix
Prairie Rattlesnake	Crotalus viridis
Unknown Snake	
BIR	DS
American Avocet	Recurvirostra americana
American Coot	Fulica americana
American Goldfinch	Spinus tristus
American Wigeon	Anas americana
Bank Swallow	Riparia riparia
Barn Swallow	Hirundo rustica
Blue-winged Teal	Anas discors
Cinnamon Teal	Anas cyanoptera
Cliff Swallow	Petrochelidon pyrrhonota
Common Yellowthroat	Geothlypis trichas
Eastern Kingbird	Tyrannus tyrannus
Franklin's Gull	Leucophaeus pipixcan
Gadwall	Anas strepera
Killdeer	Charadrius vociferus
Loggerhead Shrike	Lanius Iudovicianus
Mallard	Anas platyrhynchos
Mourning Dove	Zenaida macroura
Northern Pintail	Anas acuta
Northern Shoveler	Anas clypeata
Red-winged Blackbird	Agelaius phoeniceus
Spotted Sandpiper	Actitis macularius
Swainson's Hawk	Buteo swainsoni
Western Meadowlark	Sturnella neglecta
Western Sandpiper	Calidris mauri
Wilson's Phalarope	Phalaropus tricolor
Wilson's Snipe	Gallinago delicata
Yellow-headed Blackbird	xanthocephalus

Species identified in 2014 are bolded.



^{*}Species identified by MDT personnel.

3.6. Functional Assessment

The 2008 MWAM was used in the May 2011 Mitigation Plan to evaluate 8 acres of the existing riverine wetland associated with the tributary to Big Muddy Creek and 2 acres of the remnant wet meadow located north and south of the mitigation site. Both AAs extended outside the current project boundaries. The 2008 MWAM has also been used to evaluate the functional values of the mitigation wetlands from 2011 through 2014 (Table 6). Four AAs were assessed in 2013 and 2014 that included the created wetlands within the north parcel, preserved wetlands within the north parcel, created wetlands within the south parcel, and preserved wetlands within the south parcel. The created and preserved wetland AAs within the Big Muddy mitigation site were not separated by parcel (north/south) in 2012. The MWAM forms for the Big Muddy mitigation area completed in 2014 are located in Appendix B.

The Creation North Parcel AA encompassed 7.52 acres and included the constructed wetland cells and the excavated areas between the cells characterized by wetland, open water, and mudflat community Types 3, 6, 9, and 15. This AA was rated, as a Category II wetland with 71 percent of the total possible points in 2013 and 2014. The AA has shown continued improvement since construction. The functional ratings improved after 2012, increasing from 66.5 percent to 71 percent as a result of improvements in the level of disturbance, general wildlife habitat, production export/food chain support (tied to general wildlife habitat), and uniqueness (tied to disturbance level). High ratings were assessed for general wildlife habitat, short and long term surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, groundwater discharge and recharge, and recreation/education potential. This AA achieved 53.39 total functional units.

The Preservation North Parcel AA included 0.73 acres located within the floodway fringe of the existing tributary to Big Muddy Creek (wetland community Type 4). This AA was rated as a Category III wetland with 56 percent of the total possible points and 4.09 functional units in 2014. The total possible points and functional units achieved decreased within this AA in 2014 due to re-evaluation of the water regime (changed from perennial to seasonal) and surface water outlet (changed from unrestricted to restricted outlet). The AA received high ratings in 2014 for sediment/nutrient/toxicant removal, sediment/shoreline stabilization and recreation/education potential. Combined, the North Parcel Creation and Preservation AAs scored a total of 57.48 functional units in 2014.

The Creation South Parcel AA encompassed 4.17 acres within the footprint of the excavated wetland cell and was dominated by vegetation community Type 11. The AA was rated as a Category III wetland with 61 percent of the total possible points and 25.44 functional units in 2014. This represented a slight increase of 0.1 percent in the actual points as a result of the decrease in the disturbance rating.



Table 6. Functions and Values of the Big Muddy Wetland Mitigation Site from 2011 thru 2014.

Function and Value Parameters from the	2011	2011	2012*	2012*
2008 Montana Wetland Assessment Method	(Creation)	(Preservation)	(Creation)	(Preservation)
2006 Montana Wetland Assessment Method	AA-1	AA-2	AA-1	AA-2
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)
General Wildlife Habitat	Mod (0.5)	High (0.9)	Mod (0.7)	High (0.9)
General Fish/Aquatic Habitat	NA	NA	NA	NA
Flood Attenuation	Mod (0.5)	Mod (0.4)	Mod (0.5)	Mod (0.4)
Short and Long Term Surface Water Storage	High (1.0)	Mod (0.4)	High (1.0)	High (0.8)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	High (0.9)	High (1.0)	High (0.9)
Sediment/Shoreline Stabilization	Low (0.3)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.5)	High (0.9)	Mod (0.6)	High (1.0)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.2)	Mod (0.4)	Low (0.2)	Mod (0.4)
Recreation/Education Potential (bonus points)	High (0.15)	High (0.15)	High (0.15)	High (0.15)
Actual Points/Possible Points	5.35/10	6.55/10	6.65/10	7.05/10
% of Possible Score Achieved	53.5%	65.5%	66.5%	70.5%
Overall Category	III	II		II
Total Acreage of Assessed Wetlands within Site	6.19	0.73	10.31	2.56
Boundaries	0.19	0.73	10.31	2.50
Functional Units (acreage x actual points)	33.12	4.78	68.56	18.05

*2012 AAs included wetland areas on both sides (north/south) of Highway 2

Function and Value Parameters from the	2013	2013	2013	2013	2014	2014	2014	2014
Function and Value Parameters from the	Creation	Preservation	Creation	Preservation	Creation	Preservation	Creation	Preservation
2008 Montana Wetland Assessment Method	North Parcel	North Parcel	South Parcel	South Parcel	North Parcel	North Parcel	South Parcel	South Parcel
Listed/Proposed T&E Species Habitat	Low (0.0)							
MTNHP Species Habitat	Mod (0.5)							
General Wildlife Habitat	High (0.9)	High (0.9)	Mod (0.7)	Mod (0.7)	High (0.9)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	NA							
Flood Attenuation	Mod (0.5)	Mod (0.4)	Mod (0.5)	Mod (0.4)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.4)
Short and Long Term Surface Water Storage	High (1.0)	Mod (0.4)	High (0.9)	Low (0.3)	High (1.0)	Low (0.3)	High (0.9)	Low (0.3)
Sediment/Nutrient/Toxicant Removal	High (1.0)	High (0.9)	High (1.0)	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (0.9)
Sediment/Shoreline Stabilization	High (1.0)	High (1.0)	High (0.9)	High (1.0)	High (1.0)	High (0.9)	High (0.9)	High (1.0)
Production Export/Food Chain Support	Mod (0.7)	High (0.9)	Mod (0.4)	Mod (0.7)	Mod (0.7)	Mod (0.4)	Mod (0.4)	Mod (0.7)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	Mod (0.7)	Mod (0.7)	High (1.0)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Uniqueness	Low (0.3)	Mod (0.4)	Low (0.2)	Mod (0.4)	Low (0.3)	Mod (0.4)	Low (0.3)	Mod (0.4)
Recreation/Education Potential (bonus points)	High (0.2)	High (0.2)	High (0.2)	High (0.15)	High (0.2)	High (0.2)	High (0.2)	High (0.2)
Actual Points/Possible Points	7.1/10	6.6/10	6.0/10	5.8/10	7.1/10	5.6/10	6.1/10	5.8/10
% of Possible Score Achieved	71.0%	66.0%	60.0%	58.0%	71.0%	56.0%	61.0%	58.0%
Overall Category	II	<u>II</u>	III	III	II	III	III	III
Total Acreage of Assessed Wetlands within Site	7.52	0.73	4.17	1.83	7.52	0.73	4.17	1.83
Boundaries	7.52	0.73	7.17	1.03	7.52	0.73	7.17	1.00
Functional Units (acreage x actual points)	53.39	4.82	25.02	10.61	53.39	4.09	25.44	10.61



The Preservation South Parcel AA identified in 2014 included 1.83 acres of existing wetland and 10.61 functional units. The AA was rated as a Category III wetland with 58 percent of the total possible points in 2013 and 2014. An increase of 0.15 to 0.2 for the Recreation/Education Potential from 2013 to 2014 was the result of known hunting usage on the parcel. The seasonal/intermittent nature of the wetland hydrology within this AA was the primary factor limiting overall functional ratings. The Creation and Preservation AAs within the parcel south of Highway 2 attained a total 36.05 functional units in 2014.

3.7. Photo Documentation

Photographs taken at photo points 1 through 7 (PP-1 through PP-7; Figure 2, Appendix A) are shown on pages C-1 to C-10 of Appendix C. Photographs of the transect end points and wetland determination data points are shown on pages C-11 and C-12, and page C-13, respectively (Appendix C).

3.8. Maintenance Needs

There are no diversion structures or nesting structures currently installed at the site. One infestation of Canadian thistle (*Cirsium arvense*), a Priority 2B weed, was observed at the edge of the unnamed tributary in the northeast quadrant of the north mitigation site. The infestation covered less than 0.1 acre with a moderate cover class of 6 to 25 percent. The MDT has an ongoing weed control program for their mitigation sites that includes an annual assessment of weeds identified at each location and treatment to contain and control identified populations. The weed has not spread to other areas during the three years of monitoring.

3.9. Current Credit Summary

Table 7 summarizes the originally proposed mitigation acreages, credit ratios, and scaled performance standards from the May 2011 Mitigation Plan. This table was modified in 2012 to include the additional acreages monitored within the southern parcel. Table 8 provides a breakdown of the credit acreages (based on 2014 delineation) listed for each category scaled according to the credit criteria listed in Table 7. Each mitigation category has been divided into the respective parcels, northern or southern. Table 9 presents a summary of the site's progress in relation to the established performance standards. The total credit acres accrued at the Big Muddy wetland mitigation area in 2014 was 11.33 acres, an increase of 1.78 credit acres from 2013.

The original mitigation plan proposed the creation of 6.53 acres of emergent/aquatic bed shallow marsh within three wetland cells excavated north of Highway 2. An additional 1.76 acres of emergent wetland creation was expected to develop in the excavated areas between the cells. The passive creation of an additional 1.03 acres of emergent wet meadow located at the north boundary and adjacent to the existing wet meadow in the northern parcel was to be facilitated by the overall increase in groundwater elevation.



Table 7. Wetland Crediting and Performance Standard Summary for the original Big Muddy Creek Wetland Mitigation Site.

	Compensatory Mitigation Type	COE Mitigation Credit Ratio ¹	Proposed Acres	Preliminary Credit Estimate (Acres)	Performance Standard 1	Performance Standard 2	Performance Standard 3	Scaled % Credit Criteria ²
Northern Parcel	Creation: Establishment ³ (Area between cells [1.76 ac] and Passive creation in northern tip of site[1.03 ac])	1:1	1.03 to 2.79	1.03 to 2.79	Satisfy 1987 Manual and Regional Supplement Wetland Hydrology Wetland Soils Hydrophytic Vegetation Criteria	FAC or Wetter	Noxious Weed Absolute Cover <5%	Features constructed / implemented and: All standards met = 100% Standard 1 met and demonstrable progress on 2-3 = 70% Standard 1 not met but demonstrable progress on 1-3 = 50% Standard 1 met but lack of progress / corrective action on 2-3 = 30% Standard 1 not met and no demonstrable progress / corrective Action = 0%
	Creation: Establishment (Emergent Marsh and Open Water in Northern Parcel)	1:1	6.53	6.53	Satisfy 1987 Manual and Regional Supplement Wetland Hydrology Wetland Soils Hydrophytic Vegetation Criteria (excluding open water areas)	FAC or Wetter	Noxious Weed Absolute Cover <5%	Features constructed / implemented and: All standards met = 100% Standard 1 met and demonstrable progress on 2-3 = 70% Standard 1 not met but demonstrable progress on 1-3 = 50% Standard 1 met but lack of progress / corrective action on 2-3 = 30% Standard 1 not met and no demonstrable progress / corrective Action = 0%
	Preservation (Northern Parcel)	4:1	0.73	0.18	Satisfy 1987 Manual and Regional Supplement Wetland Hydrology Wetland Soils Hydrophytic Vegetation Criteria	NA	Noxious Weed Absolute Cover <5%	All standards met = 100% Standard 1 met and demonstrable progress on 3 = 75% Standard 1 not met but demonstrable progress on 1 and 3 = 50% Standard 1 met but lack of progress on 3 = 30% Standard 1 not met = 0%
	Upland Buffer (Northern Parcel)	5:1	0.43	0.09	NA	NA	Noxious Weed Absolute Cover <5%	Standard 3 met = 100% Standard 3 not met but with demonstrable progress = 30% Standard 3 not met with no demonstrable progress = 0%
n Parcel	*Creation: Establishment (Emergent Marsh and Open Water in Southern Parcel)	1:1	5.47	5.47	Satisfy 1987 Manual and Regional Supplement Wetland Hydrology Wetland Soils Hydrophytic Vegetation Criteria (excluding open water areas)	FAC or Wetter	Noxious Weed Absolute Cover <5%	Standard 1 met and demonstrable progress on 1-3 = 70% Standard 1 met but demonstrable progress on 1-3 = 50% Standard 1 met but lack of progress / corrective action on 2-3 = 30% Standard 1 not met and no demonstrable progress / corrective Action = 0%
Southern Parcel	*Preservation (Southern Parcel)	4:1	1.83	0.46	Satisfy 1987 Manual and Regional Supplement Wetland Hydrology Wetland Soils Hydrophytic Vegetation Criteria	NA	Noxious Weed Absolute Cover <5%	All standards met = 100% Standard 1 met and demonstrable progress on 3 = 75% Standard 1 not met but demonstrable progress on 1 and 3 = 50% Standard 1 met but lack of progress on 3 = 30% Standard 1 not met = 0%
	Upland Buffer (Southern Parcel)	5:1	NA	NA	NA	NA	Noxious Weed Absolute Cover <5%	Standard 3 net = 100 % Standard 3 not met but with demonstrable progress = 30% Standard 3 not met with no demonstrable progress = 0%
	Total			13.76 to 15.52 acres				

¹Corps of Engineers 2005 Wetland Compensatory Mitigation Ratios, Montana Regulatory Program.



²Percentages to be applied to credit estimate acres in Column 5.

³Incidentally created wetlands will be credited according to parameters listed under "Creation: Establishment".

^{*}Areas added in 2012 have been included in preliminary wetland crediting and performance standard summary approved by Corps for the Big Muddy Wetland Mitigation Project.

Table 8. Summary of wetland credits from 2011 thru 2014 at the Big Muddy Wetland Mitigation Site.

	Compensatory Mitigation Type	USACE Mitigation Credit Ratio	2011 Delineated Acres	Scaled % Credit Standards	2011 Credit Acres	2012 Delineated Acres	Scaled % Credit Standards	2012 Credit Acres	2013 Delineated Acres	Scaled % Credit Standards	2013 Credit Acres	2014 Delineated Acres	Scaled % Credit Standards	2014 Credit Acres
le le	Wetland Creation: Establishment (Area between constructed cells in Northern Parcel)	1:1	0.44	70%	0.31	0.00	0%	0.00	1.76	70%	1.23	1.76	100%	1.76
Nothern Parcel	Wetland Creation: Establishment (wetland cells in Northern Parcel)	1:1	5.75	70%	4.03	5.76	70%	4.03	5.76	70%	4.03	5.76	70%	4.03
No	Wetland Preservation (Northern Parcel)	4:1	0.73	100%	0.18	0.73	100%	0.18	0.73	100%	0.18	0.73	100%	0.18
	Upland Buffer (Northern Parcel)	5:1	3.70	100%	0.74	3.69	100%	0.74	2.37	100%	0.47	2.37	100%	0.47
	Northern Subtotal		10.62		5.26	10.18		4.95	10.62		5.92	10.62		6.45
Parcel	Wetland Creation: Establishment (wetland cell in Southern Parcel)	1:1	1	70%	4.03	4.55	70%	3.19	4.17	70%	2.92	4.17	100%	4.17
Southern Pa	Wetland Preservation (Southern Parcel)	4:1	1	100%	-	1.83	100%	0.46	1.83	100%	0.46	1.83	100%	0.46
Sou	Upland Buffer (Southern Parcel)	5:1		100%		1.31	100%	0.26	1.25	100%	0.25	1.25	100%	0.25
	Southern Subtotal	_				7.69	-	3.90	7.25		3.63	7.25		4.88
	Total		10.62		9.29	17.87		8.86	17.87		9.55	17.87		11.33



Table 9. Summary of performance standards for Big Muddy credit areas.

	Compensatory Mitigation Type	Performance Standard 1	Performance Standard 1 Performance Performance Standard 2 Standard 3		Discussion	
Northern Parcel	Creation: Establishment ³ (Area between cells [1.76 ac] and Passive creation in northern tip of site[1.03 ac])	Satisfy 1987 Manual and Regional Supplement Wetland Hydrology Wetland Soils Hydrophytic Vegetation Criteria	Achieve 70% Absolute Cover of FAC or Wetter Plants	Noxious Weed Absolute Cover <5%	Performance Standards 1, 2 and 3 met. Full credit allocated.	
	Creation: Establishment (Emergent Marsh and Open Water in Northern Parcel)	Satisfy 1987 Manual and Regional Supplement Wetland Hydrology Wetland Soils Hydrophytic Vegetation Criteria (excluding open water areas)	Achieve 70% Absolute Cover of FAC or Wetter Plants (excluding open water areas)	Noxious Weed Absolute Cover <5%	Performance Standards 1 and 3 met with demonstrable progress toward Performance Standard 2. 70% credit allocated.	
	Preservation (Northern Parcel)	Satisfy 1987 Manual and Regional Supplement Wetland Hydrology Wetland Soils Hydrophytic Vegetation Criteria	NA	Noxious Weed Absolute Cover <5%	Performance Standards 1 and 3 met. Full credit allocated.	
	Upland Buffer (Northern Parcel)	NA	NA	Noxious Weed Absolute Cover <5%	Performance Standard 3 met. Full credit allocated.	
Southern Parcel	*Creation: Establishment (Emergent Marsh and Open Water in Southern Parcel)	Satisfy 1987 Manual and Regional Supplement Wetland Hydrology Wetland Soils Hydrophytic Vegetation Criteria (excluding open water areas)	Achieve 70% Absolute Cover of FAC or Wetter Plants (excluding open water areas)	Noxious Weed Absolute Cover <5%	Performance Standards 1, 2 and 3 met. Full credit allocated.	
	*Preservation (Southern Parcel)	Satisfy 1987 Manual and Regional Supplement Wetland Hydrology Wetland Soils Hydrophytic Vegetation Criteria	NA	Noxious Weed Absolute Cover <5%	Performance Standards 1 and 3 met. Full credit allocated.	
	Upland Buffer (Southern Parcel)	NA	NA	Noxious Weed Absolute Cover <5%	Performance Standard 3 met. Full credit allocated.	



Within the northern parcel, the number of acres of created wetland within the excavated areas between cells and passive creation increased from 0.00 to 1.76 between 2012 and 2013 and remained consistent into 2014. Based on meeting Performance Standards 1 thru 3, 100 percent of the total created acreage was credited and totaled 1.76. The area between the excavated cells within the northern parcel exhibited greater than 70 percent cover by hydrophytic vegetation, less than 20 percent bare ground, and no noxious weeds. Wetland creation within the excavated cells in the northern parcel remained consistent from 2012 through 2014, totaling 5.76 acres. The estimated credit acreage was 70 percent of the total possible, or 4.03 credits acres based on the scaled criteria for meeting standards 1 and 3 and making demonstrable progress on standard 2. The absolute vegetation cover within the inundated wetland cells (Open Water community 6) has not achieved 70 percent. The noxious weed absolute cover is less than 5 percent. Preservation of 0.73 acres in the north parcel has been credited 100 percent at a 4:1 ratio providing 0.18 credits based on continued delineation as wetland habitat and noxious weed absolute cover less than 5 percent.

Wetland creation within the southern parcel totaled 4.17 acres in 2014, the same as 2013. This value decreased in 2013 in response to a reevaluation of total constructed and preserved wetland acreage within the northern and southern parcels and does not represent an actual decrease of wetland acreage south of Highway 2. Similar to the north mitigation area, 100 percent of wetland credits were allocated for meeting standards 1 thru 3. Wetlands created in the southern parcel satisfy the criteria for wetland hydrology, wetland soils, and hydrophytic Estimated vegetation cover within this excavated basin is vegetation. approximately 95 percent, with 5 percent bare ground. No noxious weeds were identified within the created wetland. Wetland preservation within the southern parcel totaled 1.83 acres and provided 0.46 credits. The three performance standards for the preservation wetland were met in 2012, 2013, and 2014. The preservation wetland within the southern parcel continues to satisfy wetland hydrology, hydric soils, and hydrophytic vegetation criteria, absolute cover of FAC or wetter plants is estimated at nearly 100 percent, and no weeds have been identified within these communities. Maintenance of the upland buffer around the southern cell generated an additional 0.25 credits in 2013 and 2014. Full credit at a 5:1 ratio was attained based on meeting the success criteria for the noxious weed cover below 5 percent within the upland buffer.



4. REFERENCES

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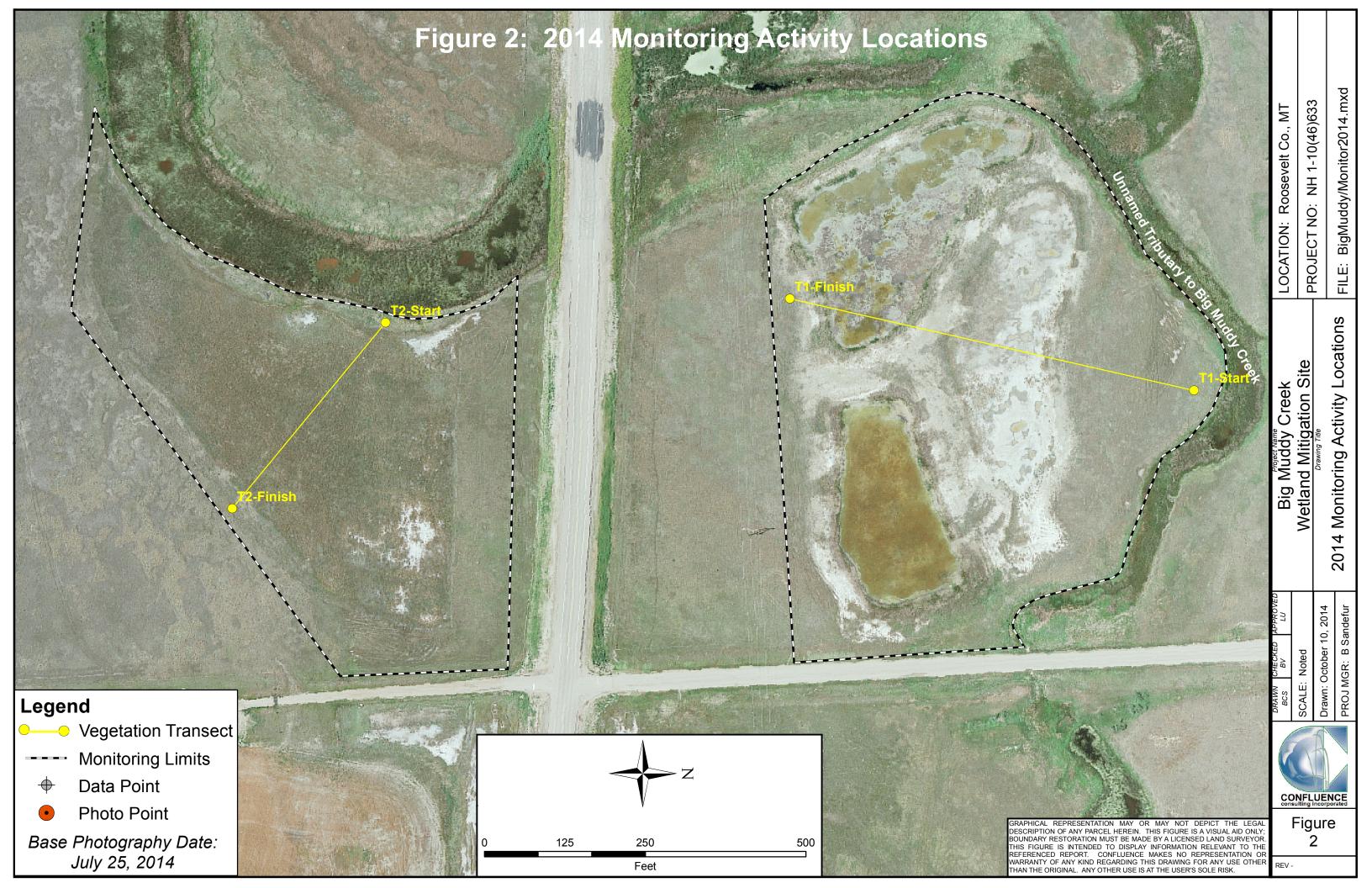
Big Muddy Creek 2014 Wetland Mitigation Monitoring Report

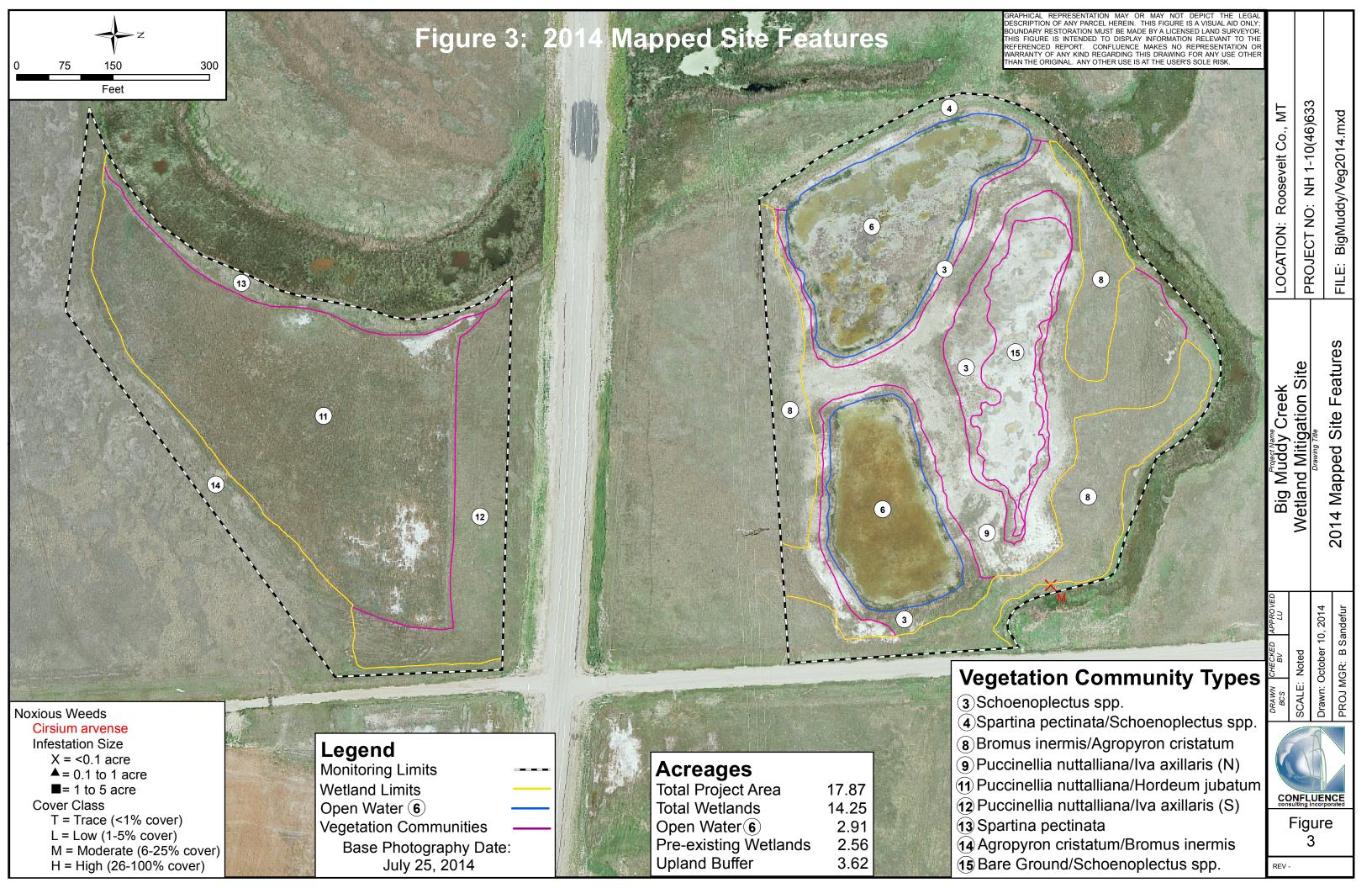
Appendix A

PROJECT AREA MAPS

Figure 2 – Monitoring Activity Locations Figure 3 – Mapped Site Features

MDT Wetland Mitigation Monitoring Big Muddy Creek Roosevelt County, Montana





Big Muddy Creek 2014 Wetland Mitigation Monitoring Report

Appendix B

2014 MDT Wetland Mitigation Site Monitoring Form 2014 USACE Wetland Determination Data Forms 2014 MDT Montana Wetland Assessment Forms

MDT Wetland Mitigation Monitoring Big Muddy Creek Roosevelt County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Big Muddy Assessment Date/Time 6/26/2014 10.41.20 A
Person(s) conducting the assessment: B Sandefur, E Sandefur
Weather: Warm, mostly cloudy, recent rain Location: 4 miles west of Culbertson
MDT District: Glendive Milepost: ~639.75 on Hwy 2
Legal Description: T 28N R 55E Section(s) 21
Initial Evaluation Date: 8/10/2011Monitoring Year: 4_#Visits in Year: 1
Size of Evaluation Area: 17.87 (acres)
Land use surrounding wetland:
Agriculture, pasture, US Hwy 2
HYDROLOGY
Surface Water Source: Unnamed trib to Big Muddy Creek, precipitation, groundwater
nundation: Average Depth:0.6 (ft) Range of Depths: 0-1.3 (ft)
Percent of assessment area under inundation:15 %
Depth at emergent vegetation-open water boundary:0.2 (ft)
f 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 <u>:</u>
Surface soil cracks, aquatic invertebrates, inundation and saturation visible on aerial, water- stained leaves, water marks, algal mat.
Groundwater Monitoring Wells
Record depth of water surface below ground surface, in feet.
Well ID Water Surface Depth (ft)
No Wells
dditional 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
levations (drift lines, erosion, vegetation staining, etc.)
Use GPS to survey groundwater monitoring well locations, if present.
ydrology Notes:
Area receives periodic overbank flow from the unnamed tributary during spring flows. Groundwater connection between stream and constructed wetlands on both north and south side of Hwy 2. Constructed depressions with periodic to permanent inundation. North cell in northern parcel dry at time of survey.

VEGETATION COMMUNITIES

Site Big Muddy

Comments:

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

Community # 3 Co	mmunity Type:	Schoenoplectus spp. /	Acres	<u>1.18</u>
Species Cover class		Species	Cover class	
Algae, green	1	Bare Ground	2	
Chenopodium album	2	Distichlis spicata	2	
Eleocharis palustris	1	Hordeum jubatum	1	
Iva axillaris	0	Lepidium perfoliatum	0	
Melilotus officinalis	0	Open Water	0	
Populus deltoides	0	Puccinellia nuttalliana	1	
Rumex crispus	0	Salix amygdaloides	0	
Schoenoplectus acutus	1	Schoenoplectus americanu	1	
Schoenoplectus maritimus	3	Scutellaria galericulata	0	
Sonchus arvensis	1	Spartina pectinata	1	
Typha latifolia	2			
Comments:				
Community # 4 Cor	mmunity Type:	Spartina pectinata / Schoenoplectus	s spp. Acres	0.78
Species	Cover class	Species	Cover class	
Carex aquatilis	1	Chenopodium album	0	
Hordeum jubatum	0	Lemna minor	1	
Lycopus americanus	0	Rosa woodsii	0	
Rumex crispus	1	Schoenoplectus acutus	2	
Schoenoplectus maritimus	2	Scutellaria galericulata	0	
Spartina pectinata	5	Symphoricarpos albus	0	
Typha latifolia	1			
Comments:				
Community # 6 Cor	mmunity Type:	Open Water /	Acres	<u>2.91</u>
Species	Cover class	Species	Cover class	
Species Algae, green	Cover class	Species Bare Ground	Cover class	
•		•		

Community # 8 Co	mmunity Type:	Bromus inermis / Agropyron cristatu	<u>m</u> Acres	<u>2.37</u>
Species	Cover class	Species	Cover class	
Achillea millefolium	1	Agropyron cristatum	4	
Artemisia cana	1	Artemisia frigida	0	
Artemisia tridentata	0	Bromus inermis	4	
Chenopodium album	1	Cirsium arvense	0	
Distichlis spicata	1	Elymus lanceolatus	1	
Elymus repens	2	Elymus trachycaulus	1	
Fraxinus pennsylvanica	0	Grindelia squarrosa	2	
Hordeum jubatum	1	Iva axillaris	0	
Lactuca serriola	0	Lepidium perfoliatum	0	
Medicago sativa	1	Melilotus officinalis	1	
Opuntia polyacantha	0	Pascopyrum smithii	1	
Poa pratensis	2	Puccinellia nuttalliana	4	
Rumex crispus	1	Sonchus arvensis	0	
Suaeda calceoliformis	1	Symphoricarpos albus	0	
Thlaspi arvense	0	Tragopogon dubius	0	
Comments:				
Community # 9 Co	mmunity Type:	Puccinellia nuttalliana / Iva axillaris	Acres	<u>2.55</u>
Species	Cover class	Species	Cover class	
Agropyron cristatum	1	Bare Ground	3	
Bassia scoparia	1	Bromus inermis	1	
Chenopodium album	1	Distichlis spicata	2	
Elymus trachycaulus	1	Glycyrrhiza lepidota	0	
Grindelia squarrosa	2	Hordeum jubatum	0	
Iva axillaris	4	Juncus balticus	1	
Lepidium perfoliatum	1	Melilotus officinalis	1	
Pascopyrum smithii	2	Populus deltoides	0	
Puccinellia nuttalliana	5	Rumex crispus	0	
Schoenoplectus maritimus	1	Sonchus arvensis	1	
Spartina pectinata	1	Suaeda calceoliformis	1	
Symphoricarpos albus	0	Typha latifolia	0	
Comments:				

Community located in northern tract.

Community # 11	Community Type:	Puccinellia nuttalliana / Hordeum ju	batum Acres	4.38
Species	Cover class	Species	Cover class	
Bare Ground	1	Bassia scoparia 1		
Chenopodium album	3	Hordeum jubatum 4		
Iva axillaris	1	Lactuca serriola	0	
Puccinellia nuttalliana	5	Rumex crispus	0	
Schoenoplectus acutus	0	Schoenoplectus maritimus	1	
Spartina pectinata	1	Suaeda calceoliformis	2	
Typha latifolia	1			
Comments:				
		ha latifolia. Typha mostly dead withir to support obligate hydrophyte.	n this	
Community # 12	Community Type:	Puccinellia nuttalliana / Iva axillaris	Acres	<u>1.25</u>
Species	Cover class	Species	Cover class	
Chenopodium album	2	Iva axillaris	4	
Lepidium perfoliatum	0	Melilotus officinalis	0	
Puccinellia nuttalliana	5	Suaeda calceoliformis	1	
Comments:				
Community located in so	outhern tract.			
Community # 13	Community Type:	Spartina pectinata /	Acres	<u>0.37</u>
Species	Cover class	Species	Cover class	
Chenopodium album	1	Iva axillaris	1	
Potentilla anserina	0	Rosa woodsii	1	
Scutellaria galericulata	1	Spartina pectinata	5	
Symphoricarpos albus	2			
Comments:				
Community # 14	Community Type:	Agropyron cristatum / Bromus inern	nis Acres	<u>1.25</u>
Species	Cover class	Species	Cover class	
Achillea millefolium	0	Agropyron cristatum	5	
Artemisia cana	0	Artemisia frigida	1	
Artemisia tridentata	0	Bassia scoparia	0	
Bromus inermis	4	Iva axillaris	0	
Linum lewisii	0	Medicago sativa	0	
Melilotus officinalis	0			
Comments:				

Community # 15 Co	ommunity Type:	Bare Ground / Schoenoplectus spp.	Acres	<u>0.84</u>
Species	Cover class	Species	Cover class	
Bare Ground	5	Distichlis spicata	0	
Eleocharis palustris	0	Hordeum jubatum	0	
Open Water	1	Puccinellia nuttalliana	0	
Rumex crispus	0	Schoenoplectus acutus	0	
Schoenoplectus maritimus	1			
Comments:				

Area inundated during early growing season. Surface water sustained through precip and occasional overbank flooding of UT-Big Muddy.

Total Vegetation Community Acreage

17.88

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

VEGETATION TRANSECTS

Big Muddy		Da	te: 6/26/2014 10	:41:20 AM
Transect Number: _	<u> </u>	_ Compass D	irection from Start:18	0
Interval Data:				
Ending Station	32	Community Type:	Bromus inermis / Agropyron	cristatum
Species		Cover class	Species	Cover clas
Achillea millefolium		0	Agropyron cristatum	2
Artemisia tridentata		0	Bromus inermis	;
Chenopodium album		2	Grindelia squarrosa	
Hordeum jubatum		2	Lactuca serriola	
Pascopyrum smithii		2	Rumex crispus	(
Ending Station	127	Community Type:	Puccinellia nuttalliana / Iva a	xillaris
Species		Cover class	Species	Cover clas
Bromus inermis		1	Chenopodium album	:
Grindelia squarrosa		0	Hordeum jubatum	
Puccinellia nuttalliana		5	Rumex crispus	(
Suaeda calceoliformis		2		
Ending Station	195	Community Type:	Bromus inermis / Agropyron	cristatum
Species		Cover class	Species	Cover clas
Achillea millefolium		0	Agropyron cristatum	
Bromus inermis		4	Chenopodium album	
Grindelia squarrosa		1	Melilotus officinalis	(
Puccinellia nuttalliana		1	Suaeda calceoliformis	(
Ending Station	242	Community Type:	Puccinellia nuttalliana / Iva a	xillaris
Species		Cover class	Species	Cover clas
Bare Ground		2	Distichlis spicata	(
Hordeum jubatum		1	Melilotus officinalis	
Puccinellia nuttalliana		4	Suaeda calceoliformis	•
Ending Station	308	Community Type:	Bare Ground / Schoenoplect	us spp.
Species		Cover class	Species	Cover clas
Bare Ground		5	Open Water	(
Puccinellia nuttalliana		0	Schoenoplectus maritimus	

Ending Station	376	Community Type:	Schoenoplectus spp. /	
Species		Cover class	Species	Cover class
Bare Ground		3	Chenopodium album	0
Distichlis spicata		1	Puccinellia nuttalliana	1
Schoenoplectus maritim	us	3		
Ending Station	440	Community Type:	Puccinellia nuttalliana / Iva a	killaris
Species		Cover class	Species	Cover class
Bare Ground		3	Elymus trachycaulus	0
Hordeum jubatum		0	Puccinellia nuttalliana	3
Suaeda calceoliformis		4		
Ending Station	460	Community Type:	Schoenoplectus spp. /	
Species		Cover class	Species	Cover class
Algae, green		1	Bare Ground	1
Chenopodium album		1	Hordeum jubatum	0
Open Water		1	Puccinellia nuttalliana	0
Schoenoplectus acutus		1	Schoenoplectus maritimus	4
Spartina pectinata		2		
Ending Station	590	Community Type:	Open Water /	
Species		Cover class	Species	Cover class
Open Water		5	Schoenoplectus maritimus	1
Ending Station	610	Community Type:	Schoenoplectus spp. /	
Species		Cover class	Species	Cover class
Algae, green		1	Bare Ground	3
Lepidium perfoliatum		0	Open Water	2
Puccinellia nuttalliana		1	Rumex crispus	0
Schoenoplectus maritim	us	4	Spartina pectinata	3
Ending Station	630	Community Type:	Puccinellia nuttalliana / Iva a	killaris
Species		Cover class	Species	Cover class
Bare Ground		3	Distichlis spicata	1
Elymus trachycaulus		0	Grindelia squarrosa	0
Hordeum jubatum		0	Puccinellia nuttalliana	4
Sonchus arvensis		3	Suaeda calceoliformis	1
Ending Station	647	Community Type:	Bromus inermis / Agropyron	cristatum
Species		Cover class	Species	Cover class
Agropyron cristatum		3	Artemisia cana	0
Bromus inermis		5	Grindelia squarrosa	2
Medicago sativa		0	Sonchus arvensis	2

Transect Notes:

Transect Number: 2 Compass Direction from Start: ___130

Interval Data:

Ending Station	11 Community Type	Spartina pectinata / Schoenoplectus spp.		
Species	Cover class	Species	Cover class	
Chenopodium album	1	Iva axillaris	1	
Rosa woodsii	0	Spartina pectinata	4	
Symphoricarpos albus	2			

Ending Station 336 Community Type: Puccinellia nuttalliana / Hordeum jubatum

	7 71		
Species	Cover class	Species	Cover class
Bare Ground	1	Chenopodium album	2
Hordeum jubatum	2	Iva axillaris	1
Puccinellia nuttalliana	5	Rumex crispus	1
Schoenoplectus maritimus	0	Suaeda calceoliformis	1
Typha latifolia	0		

Ending Station 366 **Community Type:** Agropyron cristatum / Bromus inermis

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agropyron cristatum	5
Artemisia cana	0	Bassia scoparia	1
Bromus inermis	4		

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Big Muddy

Planting Type #Planted #Alive Notes

No plantings

Comments

No woody species were installed on this site. The wetlands were revegetated with seed and salvaged material. Numerous volunteer seedlings (less than 1-inch diameter) were observed within the site, including cottonwoods, aspen, and willows.

Big Muddy

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
Bank Swallow	6	FO	UP
Barn Swallow	3	FO	UP, WM
Blue-winged Teal	9	F, L, N	OW
Cliff Swallow	8	F, FO	UP, WM
Common Yellowthroat	1	F, L	UP, WM
Eastern Kingbird	1	F, L	UP, WM
Franklin's Gull	9	F, FO, L	AB, MF, OW
Killdeer	13	F, L	MF, OW
Red-winged Blackbird	27	FO, L	MA, UP, WM
Western Sandpiper	10	F	MF, OW
Bird Comments			

BEHAVIOR CODES

 \mathbf{BP} = One of a <u>breeding pair</u> \mathbf{BD} = Breeding display \mathbf{F} = Foraging \mathbf{FO} = Flyover \mathbf{L} = Loafing \mathbf{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
Deer Sp.		Yes	No	No	
Northern Leopard Frog	3	No	No	No	
Prairie Rattlesnake	1	No	No	No	
Red Fox		Yes	No	No	
Wildlife Comments:					

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
2813	48.167148333	-104.618135	180	BM-1w
2816-24	48.164448	-104.618835	180	PP-7
2825			130	T-2, start
2826	48.16647	-104.618881	100	BM-2w
2827	48.163334	-104.618011	310	T-2, end
2828-35	48.162872	-104.620232	0	PP-6
2838-44	48.165836	-104.617004	0	PP-1
2845	48.163994	-104.61705	0	BM-3w
2846	48.16717833	-104.61785666	10	BM-3u
2854	48.167038	-104.617645	0	PP-2
2856	48.167038	-104.617645	90	PP-2
2857	48.167038	-104.617645	180	PP-2
2858	48.167038	-104.617645	270	PP-2
2859	48.167038	-104.617645	45	PP-2
2860	48.167465	-104.618301	180	T-1, start
2862	48.16716	-104.619606	90	PP-3
2863	48.16716	-104.619606	180	PP-3
2864	48.16716	-104.619606	270	PP-3
2865	48.16716	-104.619606	0	PP-3
2868	48.165768	-104.619057	0	T-1, end
2869	48.166012	-104.619835	0	PP-4
2870	48.166012	-104.619835	45	PP-4
2871	48.166012	-104.619835	315	PP-4
2880-85	48.164421	-104.616943	220	PP-5

Comments:

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?
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.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Big Muddy	City/County: Roosevel	t Sampling Date: 6/26/2014
Applicant/Owner: MDT		State: MT Sampling Point: BM-1w
Investigator(s): B Sandefur		
Landform (hillslope, terrace, etc.): Lowland		
		Long:104.618456 Datum: WGS84
Soil Map Unit Name: Lohler silty clay		NWI classification: Upland
Are climatic / hydrologic conditions on the site typical for this		
Are Vegetation Soil, or Hydrology s	ignificantly disturbed? Are "f	Normal Circumstances" present? Yes 🔽 No 🔲
Are Vegetation, Soil, or Hydrology n	aturally problematic? (If nee	eded, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map	showing sampling point lo	ocations, transects, important features, etc.
Hydric Soil Present? Yes Wetland Hydrology Present? Yes N	°_∐	d? Yes 🔽 No 🗆
Remarks: Data point in excavated basin south of high		ng wetland hydrology this season.
Tree Streeture Plot size (20 Feet Pedius) Absolute	Domiant Indicator	Dominance Test worksheet
Tree Stratum Flot Size (30 Foot Radius) % Cover:	Species? Status	Number of Dominant Species that are OBL, FACW or FAC: 2 (A)
		Total Number of Dominant Species Across All Strata: 2 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)
		Prevalence Index worksheet
		Total % Cover of: Multiply by: OBL species 60 X 1 60
		FACW species 25 X 2 50
		FAC species 0 X 3 0
Herbaceous Stratum Plot size (5 Foot Radius)		FACU species 5 X 4 20 UPL species 0 X 5 0
Chenopodium album 5	FACU_	
Hordeum jubatum 25	FACW ORL	Column Totals 90 (A) 130 (B)
Puccinellia nuttalliana 50 Typha latifolia 10	✓ OBL OBL	Prevalence Index = B/A = 1.44
Турна націона	OBL	Hydrophytic Vegetation Indicators
		☐ 1 - Rapid Test for Hydrophytic Vegetation☑ 2 - Dominance Test is >50%
		✓ 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)
Woody Vine Stratum Plot size (30 Foot Radius)		Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.
Percent Bare Ground		Hydrophytic Vegetation Yes ✓ NO □
Remarks:		
Typha is dead/severely stunted from apparent lack of	of hydrology.	

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SOIL Sampling Point: BM-1w

Profile Desc	ription: (Describe t	to the depth n	eeded to docum	ent the in	idicator or co	onfirm the absence of indicators.)	
Depth	Matrix			Features			
(inches)	Color (maist)	%(Calar (maist)	<u></u> %	Type ¹ Lo	oc ² Texture Remarks	
0-14	10YR 5/1	<u>95</u> 10Y	R 4/6	5	_CM_	Clay	
	<u> </u>	332			<u> </u>	0.45	- 2
-							
2	94	81 <u>4 - 14 - 14 - 14 - 14 - 14 - 14 - 14 -</u>		<u> </u>		D 25 25 29 20 20 20 20 20 20 20 20 20 20 20 20 20	
×	<u> </u>						
Y	<u></u>						
-	<u> </u>				<u> </u>		
				Section 1		71 P	
¹ Type: C=Co	oncentration, D=Depl	etion RM=Red	funed Matrix, CS:	=Covered	or Coated Sa	and Grains. ² Location: PL=Pore Lining, M=Matrix.	
	Indicators: (Applica					Indicators for Problematic Hydric Soils ³ :	
☐ Histosol	• • • • • • • • • • • • • • • • • • • •			leyed Mat		1 cm Muck (A9) (LRR I, J)	
_	pipedon (A2)			edox (S5)	S4400 S1400	Coast Prairie Redox (A16) (LRR F, G, H)	
Black Hi				Matrix (Se		Dark Surface (S7) (LRR G)	
Hydroge	n Sulfide (A4)			lucky Mine	To the second se	High Plains Depressions (F16)	
Stratified	Layers (A5) (LRR F	")	Loamy G	leyed Mat	trix (F2)	(LRR H outside of MLRA 72 & 73)	
	ick (A9) (LRR F, G , F			Matrix (F		Reduced Vertic (F18)	
	d Below Dark Surface	(A11)		ark Surfac	7,16 mm	Red Parent Material (TF2)	
	ark Surface (A12)			Dark Sur		☐ Very Shallow Dark Surface (TF12)	
	lucky Mineral (S1) lucky Peat or Peat (\$	22) /I DD C H		epression	s (F8) ssions (F16)	☐ Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and	
	icky Peat or Peat (S3				3 of LRR H)	wetland hydrology must be present,	
	iony i cut of i cut (oc	, (LIXIT)	(11121	u. 1 = u 1	o or Erakin,	unless disturbed or problematic.	
Restrictive I	ayer (if present):						
Type:							
	ches):		• *			Hydric Soil Present? Yes ☑ No ☐]
18 29	oils moist but not s		mo of campling			,	
1.4	ons moist but not s	aluraleu al li	ine or sampling	•			
HYDROLO	GY						
Wetland Hy	drology Indicators:						
Primary India	ators (minimum of o	ne required; ch	eck all that apply)		Secondary Indicators (minimum of two requ	ired)
Surface	Water (A1)		Salt Crust (B11)		✓ Surface Soil Cracks (B6)	
High Wa	iter Table (A2)		Aquatic Inv	ertebrates	(B13)	Sparsely Vegetated Concave Surface ((B8)
Saturation	on (A3)		Hydrogen S	ulfide Od	or (C1)	☐ Drainage Patterns (B10)	
Water M	arks (B1)		☐ Dry-Seasor	Water Ta	able (C2)	Oxidized Rhizospheres on Living Roots	s (C3)
Sedimer	it Deposits (B2)		Oxidized RI	nizospher	es on Living R	Roots (C3) (where tilled)	
☐ Drift Dep	oosits (B3)		(where n	ot tilled)		Crayfish Burrows (C8)	
Algal Ma	it or Crust (B4)		Presence o	f Reduced	l Iron (C4)	Saturation Visible on Aerial Imagery (C	9)
☐ Iron Dep	osits (B5)		Thin Muck	Surface (C	27)	Geomorphic Position (D2)	
Inundation	on Visible on Aerial II	magery (B7)	Other (Expl	ain in Ren	narks)	FAC-Neutral Test (D5)	
✓ Water-S	tained Leaves (B9)					Frost-Heave Hummocks (D7) (LRR F)	
Field Obser							
Surface Water	er Present? Ye	es 📙 No _	Depth (inc	hes):			
Water Table	Present? Yo	es <u>□</u> No _	_ ☑ Depth (inc	hes):			٦ .
Saturation Pr		es No _	✓ Depth (incl	hes):		Wetland Hydrology Present? Yes No	
(includes cap			ing well ===i=!=!	hatne ::		2000 C	
резспре Ке	corded Data (stream	gauge, monito	ımg well, aerlal pi	notos, pre	vious inspecti	uons), ii avaliabie.	
— ************************************							
		aturation/inu	ndation support	ed by hig	gh water with	thin UT-Big Muddy Creek adjacent to excavated	
WE	etland.						

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Big Muddy	City/County: F	Roosevelt Sampling Date: 6/26/2014
Applicant/Owner: MDT		State: MT Sampling Point: BM-2w
		nship, Range: 21 28N 55E
Landform (hillslope, terrace, etc.): Lowland	Local relief (c	oncave, convex, none): flat Slope (%):0
Subregion (LRR): LRR F	Lat:48	3.164481 Long: -104.618831 Datum: WGS84
Soil Map Unit Name: Lohler silty clay		NWI classification: Upland
Are climatic / hydrologic conditions on the site typical for this		
Are Vegetation Soil, or Hydrology sig	nificantly disturbed?	Are "Normal Circumstances" present? Yes 🔽 No 🔲
Are Vegetation 🔲 , Soil 🔲 , or Hydrology 🔲 na	turally problematic?	(If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map s	howing sampling	point locations, transects, important features, etc.
TO SECURITION OF THE CONTROL OF THE	within	Sampled Area a Wetland? Yes ☑ No ☐
Remarks: DP in veg com 12, undisturbed pre-existing VEGETATION - Use scientific names of plant		
Trac Stratum Plot size (20 Feet Redius) Absolute	Domiant Indicator	Dominance Test worksheet
Tree Stratum Flot Size (30 Foot Radius) % Cover:	Species? Status	Number of Dominant Species that are OBL, FACW or FAC: 2 (A)
		Total Number of Dominant Species Across All Strata: 2 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)
		Prevalence Index worksheet
		Total % Cover of: Multiply by: OBL species 75 X 1 75
		FACW species 0 X 2 0
		FAC species 20 X 3 60
Herbaceous Stratum Plot size (5 Foot Radius)		FACU species 5 X 4 20 UPL species 0 X 5 0
Chenopodium album 5	FACU	
Iva axillaris 20 Puccinellia nuttalliana 75	✓ FAC ✓ OBL	Column Totals 100 (A) 155 (B)
Puccinella nuttaliana 13	☑ OBL	Prevalence Index = B/A = 1.55
		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
Plateins (00 Foot Podius)		Problematic Hydrophytic Vegetation (Explain)
Woody Vine Stratum Plot size (30 Foot Radius)		Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.
Percent Bare Ground		Hydrophytic Vegetation Yes ✓ NO ☐
Remarks:		•

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SOIL Sampling Point: BM-2w

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth	Matrix			x Features						
(inches)	Color (maist)	<u>%</u> _	Color (moist)	%	Type ¹	_Loc ²	Texture	Remarks		
0-7	10YR 5/1	100			% <u></u>		_Clay			
7-12	10YR 5/1	97 7.5	5YR 4/4	5	С	М	Clay			
	×			27 50		200 00	2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2			
							7			
	3			<u> </u>	£		* **			
X 	<u> </u>						<u> </u>			
7 	2						<u> </u>			
	-						· · · · · · · · ·			
	_									
¹ Type: C=Ce	oncentration, D=Dep	oletion, RM=R	educed Matrix, CS	=Covered	or Coat	ed Sand Gi	rains. ² Location:	PL=Pore Lining, M=Matrix.		
	Indicators: (Applic							oblematic Hydric Soils³:		
☐ Histosol	(A1)		☐ Sandy G	Sleyed Ma	trix (S4)		1 cm Muck (A	49) (LRR I, J)		
	pipedon (A2)		Sandy F	Redox (S5))			Redox (A16) (LRR F, G, H)		
	stic (A3)			Matrix (S			_	(S7) (LRR G)		
	n Sulfide (A4)		2500	Mucky Min	176		9 7 	Depressions (F16)		
=	Layers (A5) (LRR			Gleyed Ma				utside of MLRA 72 & 73)		
	ick (A9) (LRR F, G,			d Matrix (F Dark Surfa			☐ Reduced Ver☐ Red Parent M	33 mm * m 0.34 3 7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		
	d Below Dark Surfac ark Surface (A12)	æ (ATT)		d Dark Suna)		Dark Surface (TF12)		
	lucky Mineral (S1)			epression		,		n in Remarks)		
	Jucky Peat or Peat	(S2) (LRR G,		ins Depre		F16)		rophytic vegetation and		
	icky Peat or Peat (S			RA 72 & 7	3 of LRI	RH)		plogy must be present,		
C			5005000				unless distur	oed or problematic.		
Restrictive I	Layer (if present):									
Type:			<u></u> \$\\							
Depth (in	ches):		 ;				Hydric Soil Prese	nt? Yes 🔽 No 🗌		
Remarks:										
	CV.									
HYDROLO	3656.459.									
	drology Indicators:		1 10 may 0 1 12	5						
	ators (minimum of c	one required; o						cators (minimum of two required)		
	Water (A1)		Salt Crust		/m / m		✓ Surface So			
	iter Table (A2)		Aquatic Inv					egetated Concave Surface (B8)		
Saturation			Hydrogen :				Name of the second	Patterns (B10)		
	arks (B1)		☐ Dry-Seaso					hizospheres on Living Roots (C3)		
	nt Deposits (B2)		Oxidized R		es on Li	ing Roots				
	oosits (B3) at or Crust (B4)		Presence of	ot tilled) of Poduco	d Iron (C	A)	Crayfish B	Visible on Aerial Imagery (C9)		
350	osits (B5)		Thin Muck		10.	+}	_	ic Position (D2)		
- 10 M	on Visible on Aerial	Imagery (R7)	Other (Exp					ral Test (D5)		
The state of the s	tained Leaves (B9)	imagery (D7)	Other (Exp	iaiii iii ixei	Haikoj		N	ve Hummocks (D7) (LRR F)		
Field Obser	acondered state of the Production which the least the						Trost-rica	remaining (B7) (ERRT)		
Surface Water		es 🗆 No	Depth (inc	thes):						
Water Table			Depth (inc							
Saturation Pr		ravorda <u>a</u> suvene.	Depth (inc	ANY OCCUPATION STATE			and Hydrology Pres	ent? Yes 🗹 No 🔲		
(includes car		65 <u> </u>	Deptil (inc	люз <i>у</i>		_ ***	and riyurology Frea	ent: 1es NO		
Describe Rec	corded Data (stream	ngauge, moni	oring well, aerial p	photos, pre	evious in	spections),	if available:			
·										
		ars to be sup	ported by period	lic endos	aturatio	n from se	asonal high ground	lwater, no signs of surface		
	drology.									

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Big Muddy	City/County: Roosevelf	t	Sampling	Date:	6/26/2	2014
	Sales St. Anguage (Sales Sales	State: MT	Sampling [Point: B	M-3u	
Investigator(s): B Sandefur	Section, Township, Ran		28N	55E		
Landform (hillslope, terrace, etc.): Lowland						
	48.166814	Long:	-104.61718	Datum	WGS	84
Soil Map Unit Name: Lohler silty clay		NWI cla	assification: Upla	nd		
Are climatic / hydrologic conditions on the site typical for this time of y Are Vegetation, Soil, or Hydrology significantly Are Vegetation, Soil, or Hydrology naturally present the site map showing significantly significantl	y disturbed? Are "N roblematic? (If nee	Normal Circumstan eded, explain any a	ces" present? Y answers in Remar	rks.)		
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: VEGETATION Use scientific names of plant	Is the Sampled A		No_ <u> </u>	<u> </u>		
Absolute Domiar	at Indicator	D. Janes Tee	· Indiana			
Troe Stratum Plot size (20 Foot Padius)		Number of Domithat are OBL, FA	inant Species	0	(A)	
		Total Number of Species Across		2	(B)	
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Domi That Are OBL, F	ACW, or FAC:	0.0	% (A/E	В)
	tific names of plant oot Radius) Absolute Domiant Indicator Species? Status Status Status Status	Prevalence Inde		Mult	Haly by	_
	!	OBL species		IVIUIL	O O	1
		FACW species	0 X 2	Slope (%): 0 04.61718 Datum: WGS84 Intion: Upland Imarks.) Important features, etc. No V Important features, etc. No Important features, etc. No Important features, etc. Important features, etc. Important features, etc. No Important features, etc. Important features, etc.		
		FAC species	•			
Herbaceous Stratum Plot size (5 Foot Radius)	!	FACU species		<u> </u>		
		UPL species]
Bromus inermis 80	UPL	Column Totals [80 (A)	Δ		_
		Prevalence	Index = B/A =		5.00	
			getation Indicat			
		l — ·			getation	
Applicant/Owner: MDT Investigator(s): B Sandefur Landform (hillslope, terrace, etc.): Lowland Subregion (LRR): LRR F		_	nance Test is >50			
		3 - Preva	alence Index is <=	÷ 3.0		
						:
		_			/Eval	-!\
Woody Vine Stratum Plot size (30 Foot Radius)		Indicators of hydri	c sil and wetland	hydrolog	gy must t	be
Percent Rare Ground		Hydrophytic Ve Present?	getation		_	
Remarks:						

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SOIL Sampling Point: BM-3u

Profile Desc	ription: (Describe	to the depth no	eeded to docum	ent the indicator or	confirm th	ne absence of indicators.)
Depth	Matrix			Features	. 1	
(inches)	Color (maist)	<u>%</u> C	Calar (maist)	<u>%</u> <u>Type¹</u> _	Loc ²	Texture Remarks
<u>0-5</u>	10YR 4/3	100		<u> </u>	S <u>ilt</u>	ty Clay
5-14	10YR 5/4	100			Silty C	Clay Loam
	3			NO. 1044 SA		- S
-	19					
Y	125					
Y 	*				<u> </u>	
n ======	¥	<u> </u>				-
¹ Type: C=Ce	oncentration, D=Dej	oletion, RM=Red	luced Matrix, CS	Covered or Coated	Sand Grain	
Hydric Soil	Indicators: (Applie	able to all LRR	s, unless other	vise noted.)		Indicators for Problematic Hydric Soils ³ :
Histosol	(A1)			leyed Matrix (S4)		1 cm Muck (A9) (LRR I, J)
	pipedon (A2)			edox (S5)		Coast Prairie Redox (A16) (LRR F, G, H)
_	istic (A3)			Matrix (S6)		Dark Surface (S7) (LRR G)
	en Sulfide (A4)			lucky Mineral (F1)		High Plains Depressions (F16)
=	d Layers (A5) (LRR			leyed Matrix (F2)		(LRR H outside of MLRA 72 & 73)
	ick (A9) (LRR F, G , d Below Dark Surfac			Matrix (F3) ark Surface (F6)		Reduced Vertic (F18) Red Parent Material (TF2)
	ark Surface (A12)	Δ (Δ I I)		Dark Surface (F7)		☐ Very Shallow Dark Surface (TF12)
	flucky Mineral (S1)			epressions (F8)		Other (Explain in Remarks)
	Jucky Peat or Peat	(S2) (LRR G, H)		ns Depressions (F16	i)	³ Indicators of hydrophytic vegetation and
	icky Peat or Peat (S			A 72 & 73 of LRR H	l)	wetland hydrology must be present,
C		000 18600 - 0000 000 143 6-756	1000 DEC 1100 P			unless disturbed or problematic.
Restrictive I	Layer (if present):					
Type:		3				
Depth (in	ches):		-;			Hydric Soil Present? Yes 🔲 No 🔽
Remarks: N	o signs of redoxin	norphic feature	s or hydric soil	at data point locat	tion.	
HYDROLO	GY					
19 11 11 11 11 11 11 11 11 11 11 11 11 1	drology Indicators:					
	cators (minimum of		ock all that nank			Secondary Indicators (minimum of two required)
		me required, cri				
	Water (A1)		Salt Crust (Surface Soil Cracks (B6)
☐ Saturation	nter Table (A2)		N N N N N N N N N N N N N N N N N N N	ertebrates (B13)		☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10)
				ulfide Odor (C1) Water Table (C2)		Oxidized Rhizospheres on Living Roots (C3)
	arks (B1)		44	nizospheres on Living	a Boots (C2	
	nt Deposits (B2) posits (B3)		(where n		g Roots (Ca	3) (where tilled) Crayfish Burrows (C8)
			20.000000000000000000000000000000000000	f Reduced Iron (C4)		Saturation Visible on Aerial Imagery (C9)
1,500	at or Crust (B4) posits (B5)			Surface (C7)		Geomorphic Position (D2)
- 10 N	on Visible on Aerial	Imagery (R7)	N N	ain in Remarks)		FAC-Neutral Test (D5)
The state of the s	tained Leaves (B9)	imagery (br)	L Other (Expi	all lil itematics)		Frost-Heave Hummocks (D7) (LRR F)
Field Obser	erolleri birada (keterolirika daki 11 est. 11)				ľ	Trost-ricave Hammooks (B7) (ERRT)
Surface Water		es No	Depth (inc	nes):		
Water Table				nes):		
Saturation Pr		Y-550-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-		remarks as	Motton	d Hydrology Present? Yes No
(includes cap		es TT 140 -	AT Debut (upp	nes):	vveuano	a riyaratay r resent: res NO
		n gauge, monitor	ing well, aerial p	notos, previous inspe	ections), if a	available:
Remarks: No	signs of surface	hydro, suspec	t area above in	fluence of seasona	al saturation	on.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Big Muddy	City/C	ounty: Roosevelt	Sar	mpling Date:6/26/2014
Applicant/Owner: MDT	524 96-yws.		State: MT Sar	
P. Candofur	Sectio	on, Township, Range:		
Landform (hillslope, terrace, etc.): Shoreline				Slape (%):3
				17309 Datum: WGS84
Soil Map Unit Name: Lohler silty clay			NWI classification	n: Upland
Are climatic / hydrologic conditions on the site typic				
Are Vegetation, Soil, or Hydrology _			mal Circumstances" prese	ent? Yes 🔽 No 📙
Are Vegetation, Soil, or Hydrology _	naturally problema	itic? (If neede	d, explain any answers in	Remarks.)
SUMMARY OF FINDINGS – Attach site	e map showing sam	ıpling point loca	itions, transects, im	nportant features, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Permarks: DD	No D	Is the Sampled Are within a Wetland?	ea Yes <u>☑</u>	No
Remarks: DP on northern tract near edge of s				
	Absolute Domiant Inc	dicator	Dominance Test worksho	eet
THE STATES TO SECOND TO SECOND	% Cover: Species? St		Number of Dominant Spec hat are OBL, FACW or FA	
			Fotal Number of Dominant Species Across All Strata:	
Sapling/Shrub Stratum Plot size (15 Foot	: Radius)		Percent of Dominant Spec That Are OBL, FACW, or F	
	·	F	Prevalence Index worksh	
		-	Total % Cover of: OBL species 10	X 1 10
			FACW species 30	
			•	X 3 0
Herbaceous Stratum Plot size (5 Foot		l լ	•	X 4 0 X 5 0
Distichlis spicata	30 F FAC	CW	Column Totals 40	
Puccinellia nuttalliana	10 🔽 OBL	<u> </u>		(A) (B) (B)
			Prevalence Index = E Hydrophytic Vegetation I 1 - Rapid Test for H	
			✓ 2 - Dominance Tes	, , , ,
			✓ 3 - Prevalence Inde	
			<u></u>	Adaptations (Provide
				remarks or on separate
			5 - Wetland Non-Va	ascular Plants
DIA			☐ Problematic Hydro	phytic Vegetation (Explain)
Woody Vine Stratum Plot size (30 Foot	Radius)		dicators of hydric sil and wesent, unless disturbed or	vetland hydrology must be problematic for #3, 4, 5.
Percent Bare Ground 60			Hydrophytic Vegetation Present?	Yes 🗹 NO 🗌
Remarks:				
Area occasionally inundated with salt conce	ntration at soil surface,	sparsely vegetated	d.	

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SOIL Sampling Point: BM-3w

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth	Matrix	A/ -		Features	- 1 .	2 -				
(inches)	Color (moist)		olor (moist)	<u>%</u>	200		kture	Remarks		
0-14	10YR 5/2	90 7.5YI	R 4/6	10_	<u>C</u> <u>M</u>	Sandy (Clay			
Ø <u> </u>	2	· · · · · · · · · · · · · · · · · · ·	@		197		22 (2		9	
N 10					1962	D 10				
	-				******					
X 	2									
Y 	-									
	·									
			s							
	oncentration, D=Depl							PL=Pore Lining, M=		
Hydric Soil	Indicators: (Applica	ble to all LRRs	, unless otherw	ise note	d.)	lnd —	licators for Pro	blematic Hydric Sc	oils³:	
Histosol	N N		Sandy Gle	151	98.00 98.00	□	1 cm Muck (A			
	pipedon (A2)		Sandy Re	200		무		Redox (A16) (LRR F	, G, H)	
Black Hi			Stripped N		Till the state of	片	Dark Surface			
	n Sulfide (A4)		Loamy Mu	1.5	176	ш	1 70	epressions (F16)	70	
_	Layers (A5) (LRR F		Loamy Gl	-				tside of MLRA 72 8	k 73)	
	ick (A9) (LRR F, G , H d Below Dark Surface		✓ Depleted I			Η	Reduced Vert Red Parent M			
	ark Surface (A12)	(011)	Depleted I		STATE OF THE PARTY	H		Dark Surface (TF12)	rs.	
	lucky Mineral (S1)		Redox De			H	Other (Explain	alita et amilitaren ere samuti direktioaren eta	S	
	flucky Peat or Peat (S	(LRR G, H)			sions (F16)	3Inc		ophytic vegetation a	nd	
The second secon	icky Peat or Peat (S3				of LRR H)			logy must be presen		
							unless disturb	ed or problematic.		
Restrictive I	_ayer (if present):									
Type:									_	
Depth (inc	ches):					Hyd	ric Soil Preser	nt? Yes 🔽	No <u> </u>	
Remarks:										
HYDROLO	GV									
H 1998 (1998)										
	drology Indicators:									
	ators (minimum of or							ators (minimum of t	wo requirea)	
	Water (A1)	80	Salt Crust (B		(040)	<u> </u>	Surface Soi		.f (D0)	
- N	iter Table (A2)	8	Aquatic Inve		36	Ļ		egetated Concave S	urface (B8)	
Saturation		%	Hydrogen Su			_		attems (B10)	D (00)	
	arks (B1)	29	Dry-Season			L		hizospheres on Livin	g Roots (C3)	
	t Deposits (B2)	54		**************************************	s on Living R		where til	wooden et e		
	osits (B3)		where no)		Uma (CA)		Crayfish Bu		(00)	
	it or Crust (B4)	8	Presence of Thin Muck S					/isible on Aerial Ima	gery (C9)	
100	osits (B5)	(D.7)	_			Ļ		c Position (D2)		
The state of the s	on Visible on Aerial In	nagery (B7)	Other (Expla	ın ın Ken	narks)	<u> </u>	FAC-Neutra	ar rest (D5) e Hummocks (D7) (I DD E\	
Field Obser	tained Leaves (B9)					L		e Hummocks (D7) (LKK F)	
Surface Water		s 🗆 No	Depth (inch-	ac).						
Water Table		es D No _								
						Motland H.	drology Dugge	nt? Yes 🔽	No	
Saturation Processing Concludes Cap		s No	✓ Depth (inch-	cs)		vveuand Hy	rai viugy Prese	mer res		
	corded Data (stream	gauge, monitorii	ng well, aerial ph	otos, pre	vious inspecti	ons), if availa	able:			
Remarks: No	saturation within	14 inches of su	urface at time o	of evalua	tion. Positiv	ve signs of	surface hydro	ology observed.		

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Big Muddy				2. MDT project#			I 1-10(626)		Cont	Control# 4058-001		
3. Evaluation Date 6/26	3. Evaluation Date 6/26/2014 4. Evaluators B				B Sandefur 5. We			Vetland/Site# (s) North Cell				
6. Wetland Location(s):	Т	28N R	55E	Sec1	21	Т	R		Sec2			
Approx Stationing or Mile	posts	~639.75 on H	wy 2									
Watershed 10060006			Watersh	ed/Coun	ty Lower	Misso	ouri River Wate	rshed/Roo	osevelt Co	o., MT		
7. Evaluating Agency	Confl	uence for MDT					8. Wetland	size acres	,		7.52	
Purpose of Evaluation							How assess	ed:	Measure	d e.g.	by GPS	
☐ Wetlands potentially	affected	by MDT proje	ct				9. Assesssn				7.52	
☐ Mitigation Wetlands:	pre-con	struction					(AA) size (ac	•	Measure	d o a	ov CDS	
✓ Mitigation Wetlands:	post co	nstruction					now assess	eu.	ivicasuic	u e.y.	by GF3	
☐ Other												
10. Classification of Wet	land and	d Aquatic Habi	tats in AA	A								
HGM Class (Brinson)		ass (Cowardin			er (Cowardi	in)	Water Re	gime		% of <i>A</i>	VA	
Depressional	Unco	onsolidated Bot	tom	Excava	ted		Seasonal/In				40	
Depressional	Eme	rgent Wetland		Excava	ted		Seasonal/In	ermittent			50	
Riverine	Eme	rgent Wetland					Permanent/F	Perennial			10	
] [
11. Estimated Relative Ab		e Abund										
General Condition of i. Disturbance: (use matraquatic nuisance vegetation)	ix below to			iate respor	Predo	minant	ns for Montana-li conditions adjacent	to (within 500) feet of) AA		heavily grazed	
Conditions	within AA		natura hayed conve roads	al state; is no d, logged, or erted; does n s or buildings	ot grazed, otherwise	mode select subject few r	erately grazed or ha ctively logged; or ha ect to minor clearing loads or buildings; r d or ANVS cover is	yed or is been i; contains noxious	or logged placemer hydrologi	; subject nt, gradin cal altera density; c	to substantial fill g, clearing, or ation; high road or or noxious weed	
AA occurs and is managed in predo grazed, hayed, logged, or otherwise roads or occupied buildings; and no <=15%.	e converted;	does not contain	lo	ow distur	bance		low disturba	nce	mode	rate c	listurbance	
AA not cultivated, but may be mode selectively logged; or has been sub placement, or hydrological alteration noxious weed or ANVS cover is <=3	ject to relati n; contains	vely minor clearing,		modera disturba		mo	oderate distu	high disturbance				
AA cultivated or heavily grazed or lo substantial fill placement, grading, o high road or building density; or no >=30%.	clearing, or l	hydrological alteration	on; hi	gh distur	bance		high disturbance high				urbance	
Comments: (types of districted wetland cells coagriculture, i.e. grazing. Hw	ontinue to	o exhibit vegeta	ition deve	lopment.						cent la	and used for	
ii. Prominent noxious, aqu Cirsium arvense	uatic nui:	sance, other e	xotic spe	cies:								
iii. Provide brief descripti	ve sumn	nary of AA and	surroun	ding land	d use/habit	at						
The AA includes the constru between constructed wetlan									vity in ope	n wate	er. Area	

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		rent management ence of additional		,	Modified Rating	
>=3 (or 2 if 1 is forested) classes	Н	NA			NA	NA	
2 (or 1 if forested) classes	М	NA	NA		NA	NA	
1 dass, but not a monoculture	М	<no< td=""><td></td><td></td><td>YES></td><td>L</td><td></td></no<>			YES>	L	
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA			NA	NA	

Comments: Vegetation is predominantly emergent. No woody overstory associated with creek although abundant cottonwood seedlings were observed in 2013. Aquatic bed class has yet to develop, likely inhibited by murky conditions of open water.

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

	14A. Habitat for Federal	v Listed or Propo	sed Threatened or	^r Endangered Pla	ants or Animals:
--	--------------------------	-------------------	-------------------	-----------------------------	------------------

i. AA is Documented	(D) or Suspect	ted (S) to conta	ain (check one bas	sed on definitions	contained in ins	tructions):	
rimary or critical habita	t (list species)	O D () s				
econdary habitat (list S	pecies)	() D ()) s				
ncidental habitat (list sp	ecies)	() D () s				
lo usable habitat		 ✓S					
ii. Rating (use the cond	usions from i a	bove and the m	atrix below to arriv	e at [check] the fun	ctional 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	OL
Sources for documented use	SFWS databas	e for Roosevelt	County				
i. AA is Documented (D		` ,	_	d on definitions c	ontained in instr	uctions):	
econdary habitat (list S	` ' '	000		S3)			
ncidental habitat (list sp	ecies)	O D @	Greater Sage	e-Grouse (S2)			
No usable habitat			S				
ii. Rating (use the conc	usions from ia	bove and the m	atrix below to arrive	e at [check] the fun	ctional 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	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use

Rating

.9H

.7M

Suspected species identified by MTNHP for Roosevelty County

.5M

.2L

.1L

																			Mode	erate		
bstantial (based	d on any	of the	followin	g [che	ck]):						Minir	nal (b	ased or	any of	the foll	owing	[check])):				
observations	of abun	dant wil	ldlife #s	or hig	h specie	es diver	sity (dui	ring an	y period	d)	fe	w or n	o wildlif	e obsei	rvations	during	g peak u	ise per	iods			
abundant wild	llife sigr	such a	as scat,	tracks	, nest st	tructure	s, game	e trails,	etc.		lit	tle to r	no wildli	e sign								
presence of e	xtremel	y limitin	g habita	at featu	ires not	availat	ole in the	e surro	unding	area	s	oarse a	adjacen	t upland	d food s	ources	6					
interviews wit	h local b	oiologist	ts with k	nowle	dge of t	he AA					in	tervie	ws with	ocal bi	ologists	with k	nowledo	ge of th	e AA			
oderate (based o	on any c	of the fo	llowing	[check	:]):																	
observations	of scatte	ered wil	dlife gro	ups o	r individ	uals or	relative	ly few	species	during	peak pe	eriods										
common occu			•		s scat,	tracks,	nest str	uctures	s, game	trails, e	etc.											
adequate adja																						
interviews wit	h local t	oiologist	ts with k	nowle	dge of t	he AA																
i. Wildlife hab rom #13. For other in terms o permanent/pere	class of of their	over to	be con	nside positi	ered ev	enly d	istribut (see #	ted, th #10).	ne mos Abbrev	t and I viation:	east p	revale ırface	ent veg water	etate durati	d class ons ar	es m	ust be ollows:	within : P/P =	20% o	f each		
erms])																						
Structural liversity (see				Hi	gh							Mod	erate					L	ow			
t13) Class cover																						
listribution (all regetated classes)		Eve	en			Une	ven			Eve	en			Une	ven			Ev	en			
Ouration of ourface water in ≥ 0% of AA	P/P	S/I	T/E	Α	P/P	S/I	T/E	А	P/P	S/I	T/E	Α	P/P	S/I	T/E	А	P/P	S/I	T/E	А		
ow disturbance t AA (see #12i)	Е	Е	E	Н	Е	Е	Н	н	E	Н	Н	М	E	Н	М	М	Е	Н	М	М		
Moderate	н	н	н	н	Н	н	Н	м	Н	н	М	м	Н	М	м		н	м	L	L		
		-''				\vdash		ļ."	لتنبر		IVI	IVI			IVI							
see #12i) ligh disturbance	М	М	М	L	М	M	L	L	М	М	L	L	М	L	L	L	 L	L	L	L		
see #12i) ligh disturbance t AA (see #12i) iii. Rating (l	M use th	M e cond	M Clusio	L		M	L	L	М	M atrix b	L elow t	L b arr	М	L	L k] the	func	L	L	L	L)	
ii. Rating (U	M use th	M e cond	M Clusio	L ns fro		M nd ii a	L	L	М	M atrix b	elow t	L b arr	M ive at	L	k] the	func	tional	L	L	L	Low	
see #12i) High disturbance It AA (see #12i) III. Rating (UEVidence of V	M use th	M e cond	M Clusio	L ns fro	om i a	nd ii a	L	L	М	M atrix b	elow to	L b arr	M ive at	L	k] the	func g (ii)	tional	L	L	L		1
see #12i) ligh disturbance It AA (see #12i) liii. Rating (u Evidence of v Substantial	M use th	M e cond	M Clusio	L ns fro	om i a Except	nd ii a	L	L	М	atrix b	elow t	L b arr	M ive at	L	k] the	funci g (ii) derat	tional	L	L	L	Low .7M	
see #12i) High disturbance at AA (see #12i) High disturbance at AA (see #12i) High disturbance at AA (see #12i) High disturbance at AA (see #12i)	M use th	M e cond	M Clusio	L ns fro	om i a	nd ii a	L	L	М	M atrix b V High	elow t	L b arr	M ive at	L	k] the	func g (ii) derat	tional	L	L	L	Low	
see #12i) High disturbance at AA (see #12i) iii. Rating (the Evidence of vhe Substantial Moderate Minimal	M use th	e cond	M Clusio	ns fro	Exception 1 and 1	nd ii a	above :	and t	M he ma	M Atrix b V High .91 .71	elow to Vildlife	o arri	M ive at	L	k] the	funci g (ii) derat .8H	tional	L	L	L	Low .7M .3L	
iii. Rating (understand product of voluments) B.D. General I and be used storable due storable due	Seve	e conou	clusion(i)	ns fro	Dm i a Exception 1E .94 .6N and a	nd ii a	above at tracks function by per	and t	M hhe ma	M High .91 .71 .41 A is u	L L L L L L L L L L L L L L L L L L L	o arm	M ive at itat fee	Checifichecies e existence e e	k] the srating Moo	funci g (ii) derat .8H .5M .2L	tional e	points corred by f	s and r	rating)	Low .7M .3L .1L	
ii. Rating (u Evidence of v Substantial Moderate Minimal D. General I ould be used storable due	Sever	e conuse (clusion (i)	ns fro	1E 2.94 Asset preclusive records in the contract of the contra	nd ii a tional tional tional animal	above and tracks function to the street of t	and t	M he ma	M High 9 .71 .41 durin A is u	elow the Wildlife of the Manager State of the Land of	o arm	M ive at itat feather.	checicatures e exist	k] the rating Mod	funcing (ii) derat 8H 5M .2L	tional e	points orred d by f ed in a	s and r	rating)	Low .7M .3L .1L	
iii. Rating (the Evidence of volume to the Minimal omments ID. General I ould be used a storable due to the Mahare of the Mahare of the Minimal omments ID. Habitat Que our further of surface of su	Seven	e conuse (clusion (i)	ns fro	1E .9h .6M and a	nd ii a tional H Innimal	tracks funct by persired	and t	M he ma	M High 9 .71 .41 durin A is u	elow the Wildlife of the Manager State of the Land of	o arm hab	M ive at itat feat for the feat feat feat feat feat feat feat fea	checichecie e existing in the control of the contro	k] the serating Moo	funcing (ii) derat 8H 5M .2L	tional e	points orred d by f ed in a	s and r	" such huse	.7M .3L .1L	ζ
	Sevee	e conuse (clusion (i)	ns fro	1E .9h .6M and a	nd ii a tional H Innimal	tracks sfunct by per sired seemial	and t	he ma	M High 9 .91 .41 durin A is u	elow the Wildlife of the Manager State of the Land of	o arm hab	M ive at itat feather.	L Check temite	k] the s rating Moo	funcing (ii) derat 8H 5M .2L	tional e	points orred d by f ed in a	s and r	" such the sporary	Low .7M .3L .1L	ζ

Duration of surface water in AA		Pe	manent / I	Perennial				Se	asonal /	Intermitten	t			Tem	porary/	Epheme	ral	
Aquatic hiding / resting / escape cover	Opt	imal	Adeq	uate	Po	oor	Opti	mal	Ade	quate	Po	or	Opti	mal	Adec	quate	Pc	oor
Thermal cover optimal/ suboptimal	0	S	0	S	0	S	0	S	0	S	0	S	0	S	0	S	0	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6М	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially fou	ınd in AA:							
ii. Modified Rating (NOTE: Modified score can a) Is fish use of the AA significantly reduced by a current final MDEQ list of waterbodies in need of 1 fishery or aquatic life support, or do aquatic nuisar yes, reduce score in i above by 0.1: Modified F	culvert, dike TMDL develonce plant or	, or other mo	an-made s listed "Pro	bable Imp	aired Úses" ind	cluding cold or w		
b) Does the AA contain a documented spawning a comments) for native fish or introduced game fish:		r critical hab			he adjusted sc	welling area, etc. ore in i or iia abo	-	
iii. Final Score and Rating: 0 NA	Comments	s: Closed	wetland	cells wit	h no direct s	surface water	inlet or outlet.	
14E. Flood Attenuation: (Applies only to wetlar channel or overbank flow, click NA here	nds subject t and proceed		ia in-chann	el or overl	oank flow. If w	etlands in AA are	e not flooded from in-	
i. Rating (working from top to bottom, use the m Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly e	to arrive at] entrenched - tream types	C, D, E	Moderat	points and rati ely entrenched stream type		ed-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	.9Н	.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 E ER = 1.4				Entrenched ER = 1.0 - 1.4		
C stream type D stream type E stream t	ype	B stream		A	stream type	F stream typ	e G stream type	
2 x Bankfull Dep		Bankfull De	epth (Floo Bankful	d-prone Width I Width		
Floodprone width ii. Are ≥10 acres of wetland in the AA subject to fi	/ Bankfu width		nade featur	es which r	ra	intrenchment atio antly damaged b	v floods located	
within 0.5 mile downstream of the AA (check)? Comments: AA is adjacent to unnamed to mitigation area. Floodbrone	Y () tributary c	N	ddy Cree	k and co	ontains no o	outlet. Unnam	ned tributary is outsic	le
14F. Short and Long Term Surface Water upland surface flow, or groundwater flow. It 14G.)	er Storage f no wetlar	: (Applies ands in the A	to wetland A are sub	ls that flo pject to flo	od or pond frooding or por	om overbank onding, dick	r in-channel flow, precip	pitation, I to
 i. Rating (Working from top to bottom, use water durations are as follows: P/P = perma further definitions of these terms].) 								
Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic	;	>5 acre feet			1.1 to 5 acre	e feet	≤1 acre foot	

iditifer 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	.9Н	.8Н	.8Н	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond < 5 out of 10 years	.9Н	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments:

Constructed cells were either inundated at time of site visit or showed sufficient signs of inundation during early growing season. Cells with greater than 5 ac ft of storage potential.

= low	•	vorking f	rom top	to bot	tom, us	se the r	natrix b	elow to	o arrive	at [checl	k] the f	functiona	ıl points	s and ra	ting [H	= high,	M = m	oderate, o
Sedim		ient, and A	toxicant .	input	com	to delive pounds substar	r levels of at levels ntially important	of seding such the paired. Its or to	nents, nut nat other Minor sed	with poter trients, or functions a dimentation or signs of	are n,	nutrient with po- compour	lopment s, or toxi tential to ids such	for "prob cants or deliver h that othe tion, sou	able ca AA rece ligh leve er function rces of r	uses" relatives or so this of sed ons are s	ated to surround liments, lubstanti or toxica	d of TMDL sediment, ing land us nutrients, o ally impaire ants, or sig
		land vege				≥ 70%		ioa aon	< 7	0%			≥ 70		уртпоа п	on piece	< 70)%
Evidei	nce of flo	oding / po	onding in	AA .	Yes		No	Y	es	No		Yes		No		Yes	3	No
AA co	ntains no	or restr	icted ou	tlet	11		.8H	.7	м	.5M		.5N	1	.41	л	.3L	. [.2L
AA co	ntains ur	nrestricte	ed outlet		.91		7М	.6	М	.4M		.4N	1	.31	_	.2L		.1L
Com	ments	: Veget	ation co	over alc	ong sho	oreline	around	constr	ucted c	ells has o	develo	ped to g	reater t	han 70%	6.			
draina proce	ge, or or ed to 14I	n the sho .)	reline of	a stand	ing wate	er body	which is	subjec	t to wave	in the ban e action. I	f 14H d	loes not a	pply, cli		ural or r NA he		de	
		and strean cies with s		ings						ce water ad								
of ≥6 (s	see Appei	ndix F).			Perr	manent /	Perennial		Se	easonal / In	termitter	nt	Te	emporary /	Epheme	eral	1	
≥ 65%						11-	_			.9⊦	-				M		1	
35-64%	0					.71	_			.6N					5M			
< 35%						.3L				.2L					1L			
141		ction Ex				ort:												
									t ratings									
Ge		sh Habita							t ratings g (14C.iii									
Ge	neral Fis Rating (sh Habita 14D.iii.)		G			Habitat			i.)								
Ge	neral Fis	sh Habita 14D.iii.) ⊣		G(E/H			Habitat M			i.)								
Ge	neral Fis Rating (* E/I	sh Habita 14D.iii.) ⊣		G(E/H			M H			L M								
Ge	neral Fis Rating (* E/I	sh Habita 14D.iii.) ⊣		G(E/H)			M H			M M								
ii. Rawetlar subsu	METAL FISHER STATE OF THE STATE	A Orking from the telet; the tilet; the tilet; the first for further some to the tilet; the first for further some the tilet; the first for further some tilet; the some tile	om top to he AA; F nal three	GGE/H H H M H O bottom Factor B e rows p	i, use the elevel ertain to f these	me matrix of biologo duratic	Habitat M H M M K below t gical act	o arrive	e at [checking from ater in the	M L L L L L L L L L L L L L L L L L L L	II.i.); Fa re P/P,	actor C =	whether	or not thas previous	ne AA co ously de	ontains a fined, ar	surface nd A = "a	e or
ii. Rawetlar subsu [see in A B	Mating (Wild comportace out	A A orking from the first for further further further for further	om top to he AA; F nal three ther defin tated comp Mode	Green H	i, use the level ertain to f these locres	me matrix of biolo o duratic terms].)	Habitat M H M M K below t gical act on of sur	eo arrive	e at [checking from ater in the	M L L Ck] the fun above (14e AA, whee	H.i.); Fare P/P,	actor C = S/I, and	whether T/E are	or not the as previous of the or not the or not the or not the as previous of the or not the or no	ne AA co busly de etated com Mod	ontains a fined, ar ponent <1 a erate	a surface nd A = "a	e or absent"
ii. Rawetlar subsu [see in A B C	Mating (Wating (Wating to our struction with the comportance our structure our	A Orking from the titlet; the files for full Vege,	om top to he AA; F nal three ther definated comp	GGE/H H H M H O bottom Factor B e rows p	i, use the level ertain to f these larges	me matrix of biologo duratic terms].)	Habitat M H M M K below t gical act pon of sur	o arrive ivity ratiface wa	e at [checking from the gelated core	M L L Ck] the fundabove (14e AA, whee mponent 1-5 :	II.i.); Fa re P/P, acres	actor C =	whether T/E are	or not thas previo	ne AA co ously de	ontains a fined, ar	surface nd A = "a	e or absent"
ii. Rawetlar subsu [see ir A B C C	Mating (Wating	A A orking from the telet; the fins for furth Vege gh No	om top to he AA; F nal three ther defin tated comp Mode Yes	H H H H O bottom Factor B O rows p nitions o onent >5 a rate No	n, use the level ertain to f these locres	ee matrix of bioloo duratic terms].)	Habitat M H M M K Selow t gical act on of sur	eo arrive	e at [checking from atter in the egetated cor	M M L L L Ck] the fun above (14e AA, when mponent 1-5. derate	H.i.); Fare P/P,	actor C = S/I, and	whether T/E are	or not the as previous Vege gh No	ne AA co busly de etated com Mod Yes	ontains a efined, ar aponent <1 : erate No	a surface and A = "a acre L Yes	e or absent"
ii. Rawetlar subsu [see in A B	Mating (Yating (Wating	A orking from the telephone of tel	om top to he AA; F nal three ther defin tated comp Mode Yes	H H H H O bottom Factor B For rows p nitions o onent >5 a rate No	n, use the level ertain to f these lores Yes .6M	ee matrix of bioloo duratic terms].)	Habitat M H M M M K Selow t gical act on of sur	o arrive ivity ratiface was veight No	e at [checking from atter in the egetated cor Mo Yes 7.7H	M M L L L Ck] the fun above (14 e AA, where mponent 1-5 · Noderate	H.i.); Fare P/P, acres Yes .5M	ow No	whether T/E are Hi Yes .8H	vegegh No .6M	ne AA co busly de etated com Mod Yes	ontains a efined, an apponent <1: erate No	a surface and A = "a acre L Yes .3L	e or absent"

i. Discharge Ind The AA is a slope we Springs or seeps are Vegetation growing d Wetland occurs at the Seeps are present at AA permanently flood Wetland contains an Shallow water table a Other:	thand known or obluring doman e toe of a nate the wetland of ded during dro outlet, but no and the site is	nt season/dro ural slope edge ought periods inlet s saturated to	the surface	Wetl: Stream Othe	neable substr: and contains am is a knowr r:	inlet but no oi 'losing' strea	ithout underl ut let m; discharge	ying impeding laye	
				uration at AA	Wetlands FRO		VATER DISCH	HARGE OR WITH W	'ATER
Criteria			P/P		S/I		Т	None	
Groundwater Discharge or R	echarge		1H		.7M		.4M	.1L	1
nsufficient Data/Information						NA			
K. Uniqueness: Rating (working from to	AA contair or matur	ns fen, bog, v re (>80 yr-old	varm springs d) forested	AA does cited rar	k] the function not contain to types and #13) is high (previously structural	AA does	s not contain previ	ations
		r plant assoc S1" by the M		plant asso	ciation listed the MTNHP	•	and stru	uctural diversity (# low-moderate	13) is
stimated relative bundance (#11)	rare	commo	abundant	rare	common	abundant	rare		undant
_ow 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
ligh disturbance at AA #12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L
4L. Recreation/Education Is the AA a known or porture and proceed to the categories of the categories	otential rec.	/ed. site: (ch summary ar	leck) Y	иO	(if 'Yes' conf	tinue with the	evaluation;	if 'No' then click n-consumptive re	_
ii. Rating (use the matrix	below to arri	ive at [check] the functiona	I points and	rating)				
Cnown or Potential Recreation Public ownership or public e	asement with	general publi		rmission req	uired)		K	.2H .15H	
Private ownership with gener	•	` .	. ,					.15H .1M	
rivate or public ownership v	without genera	ai public acce	ss, or requiring	permission f	or public acce	:55		.1M .05L	
omments: IDT-owned site with kn	own huntin	g.					" -		<u> </u>

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): North Cell - Created

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	М	.5	1	3.76	
C. General Wildlife Habitat	Н	.9	1	6.768	V
D. General Fish Habitat	NA	0	0	0	
E. Flood Attenuation	М	.5	1	3.76	
F. Short and Long Term Surface Water Storage	Н	1	1	7.52	V
G. Sediment/Nutrient/Toxicant Removal	Н	1	1	7.52	
H. Sediment/Shoreline Stabilization	Н	1	1	7.52	V
Production Export/Food Chain Support	М	.7	1	5.264	
J. Groundwater Discharge/Recharge	Н	1	1	7.52	V
K. Uniqueness	L	.3	1	2.256	
L. Recreation/Education Potential (bonus points)	Н	.2	NA	1.504	
Totals:		7.1	10	53.392	
Percent of Possible Score			71 %		

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)

	ı	II	III	IV
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MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name	Big Muddy			2. MDT	project#	NH	1-10(626)		Cont	trol#	4058-001
3. Evaluation Date	6/26/2014	4. Evaluators	B Sar	ndefur	5.	Wetl	and/Site# (s)	North Ce	ell - Prese	rvation	
6. Wetland Location(s	s): T	28N R	55E	Sec1	21	Т	R		Sec2		
Approx Stationing or	Mileposts	~639.75 on Hw	y 2								
Watershed 10600	006	V	Vatersl	ned/Coun	ty Big Mu	ıddy C	Creek, Lower M	lissouri, S	heridan C	0.	
7. Evaluating Agency	Confl	uence for MDT					8. Wetland	size acres	;		0.73
Purpose of Evaluation	on						How assess	ed:	Measure	ed e.g. b	y GPS
☐ Wetlands potenti	ally affected	by MDT project					9. Assesssn				0.73
☐ Mitigation Wetlar	nds: pre-con	struction					(AA) size (ac	•	Measure	dea b	v GPS
Mitigation Wetlar	nds: post co	nstruction								u 0.g. 2	, c. c
☐ Other											
10. Classification of	Wetland and	d Aquatic Habita	ts in A	Α							
HGM Class (Brinson) Cla	ass (Cowardin)		Modifie	er (Coward	in)	Water Re	egime		% of A	4
Riverine	Eme	rgent Wetland					Seasonal/In	termittent			100
11. Estimated Relativ		e Commoi									
12. General Conditio i. Disturbance: (use aquatic nuisance veg	matrix below to		Mana	aged in predoral state; is no	Predo ominantly ot grazed,	Land mode	conditions adjacent not cultivated, but erately grazed or ha	to (within 500 may be ayed or	D feet of) AA Land cult or logged	ivated or h	neavily grazed o substantial fill
Cond	ditions within AA		conv			subje few r	ctively logged; or ha ect to minor clearing oads or buildings; r I or ANVS cover is	g; contains noxious	hydrologi building	ical alterati	, clearing, or on; high road or noxious weed =30%.
AA occurs and is managed in grazed, hayed, logged, or oth roads or occupied buildings; a <=15%.	erwise converted	; does not contain		ow distur	bance		low disturba	ince	mode	erate di	sturbance
AA not cultivated, but may be selectively logged; or has bee placement, or hydrological alt noxious weed or ANVS cover	en subject to relati eration; contains	ively minor clearing, fill		modera disturba		mo	oderate distu	rbance	hic	ıh distu	rbance
AA cultivated or heavily graze substantial fill placement, grahigh road or building density; >=30%.	ding, clearing, or	hydrological alteration;	hi	igh distur	bance		high disturba	ince	hic	ıh distu	rbance
Comments: (types of Grazing eliminated with Big Muddy Creek.					tures locate	d nort	h of the projec	t site. Exi	sting wetl	and ass	ociated with
ii. Prominent noxious, Cirsium arvense	, aquatic nui	sance, other exc	otic sp	ecies:							
iii. Provide brief desc							. M	.l. 4b - 4 ¹	dane '''	-41c ''	
AA encompasses existi north boundaries. The construction.											

13. Structural Diversity: (based on number of "Cowardin" vegetated classes present [do not include unvegetated classes], see #10 above) Initial Is current management preventing (passive) Modified Existing # of "Cowardin" Vegetated Classes in AA Rating existence of additional vegetated classes? Rating >=3 (or 2 if 1 is forested) classes NA NΑ NA Н 2 (or 1 if forested) classes NA NΑ NA Μ 1 class, but not a monoculture Μ YFS> L <NO 1 class, monoculture (1 species comprises>=90% of total cover) NA NΑ NA L Comments: Emergent vegetation class. 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) \bigcirc D \bigcirc S

		0 0					
Secondary habitat (list S	pecies)	□ D □) S				
Incidental habitat (list sp	ecies)	□ D) S				
No usable habitat		√ S					
ii. Rating (use the cond	usions from i a	bove and the m	atrix below to arrive	e at [check] the fun	ctional 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	SFWS database	e for Roosevelt	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)

Secondary habitat (list Species)

Incidental habitat (list species)

No usable habitat

O D O S

Blue Heron (S3)

Greater Sage-Grouse (S2)

S

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

ii. Italing (use the conc	iusions nonn a	bove and the n	IAU IX DEIOW LO AITIV	e at [check] the full	ctional points and	raurig)	
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	OL
S2 and S3 Species: Functional Points and Rating	.9H	7M	6M	.5M	.2L	1L	OL

Sources for documented use

MTNHP tracker for Roosevelt County

bstantial (based observations o																			Mod	erate	;	
-	on any	of the	followin	g [che	ck]):						Minir	nal (b	ased or	any of	the foll	owing	[check])):				
1	of abund	lant wil	dlife #s	or high	n specie	es diver	sity (du	ring an	y period	i)	fe	w or n	o wildlif	e obsei	vations	during	g peak u	ise per	iods			
abundant wildl	life sign	such a	ıs scat, i	tracks,	nest st	tructure	s, game	e trails,	etc.		lit	tle to r	no wildli	fe sign								
presence of ex	xtremely	/ limitin	g habita	at featu	ires not	availal	ole in the	e surro	unding	area	S	oarse a	adjacen	t upland	d food s	ources	3					
interviews with	local b	iologist	ts with k	nowle	dge of t	he AA					in	tervie	ws with	ocal bi	ologists	with k	nowledg	ge of th	ne AA			
oderate (based or	n any o	f the fo	llowing	[check]):																	
observations o	of scatte	red wil	dlife gro	ups or	individ	uals or	relative	ly few	species	during	peak pe	eriods										
common occur	rrence o	of wildli	ife sign s	such a	s scat,	tracks,	nest str	uctures	s, game	trails, e	etc.											
adequate adja	cent up	land fo	od sour	ces																		
interviews with	n local b	iologist	ts with k	nowle	dge of t	he AA																
•		·			•																	
i. Wildlife habit	class c	over to	o be co	nside	ered ev	enly d	listribut	ted, th	ne mos	t and I	east p	revale	ent veg	etate	d class	es mi	ust be	within	20% c	•	1	
other in terms of permanent/pere erms])							•	,												of the	se	
Structural																						
liversity (see 13)				Hiç	gh							Mod	erate					L	ow			
Class cover	ution (all																					
listribution (all regetated		Eve	an			Une	ven			Eve	en			Une	ven			E۱	/en			
lasses)						ı		1				ı						1				
Duration of curface water in ≥	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/I	T/E	А	P/P	S/I	T/E	А	P/P	S/I	T/E	Α		
0% of AA																						
ow disturbance t AA (see #12i)	Е	Е	Е	Н	Е	Е	Н	н	Е	Н	Н	М	Е	Н	. M	М	Е	Н	М.	М.		
Moderate listurbance at AA	н	Н	Н	н	Н	н	н	м	Н	Н	м	м	Н	М	м	L	н	м	L			
see #12i)			<u> </u>								<u> </u>					Ш	\blacksquare		-			
ligh disturbance at AA (see #12i)	М	М	М	L	М	М	L	L	M	М	L	L	М	L	L	L	L	L	L	L		
ļi:		_																				
iii. Rating (u	ise the	e con	clusio	ns fro	om i a	nd ii a	above	and t	he ma	atrix b	elow t	o arri	ive at	chec	k] the	funct	tional	points	s and	rating)	
Evidence of w													itat fea								,	
				Е	xcept	tional		Ī		High	1				Mod	derat	е				Low	
Substantial					45					.91	ı [ᅃ					71.4	1
Moderate					1E			_		.91	1					8H	\vdash				.7M	\vdash
woderate					.9⊦	1				.71	М					5M					.3L	
Minimal					.6N	, [.41	л I					.2L					.1L	
······································					.010			1		.71												

i. Habitat Quality and	Known	/ Suspec	ted Fish	Specie	s in A	A (usen	natrix to	arrive a	t[check	the funct	ional po	ints and	d rating)					
Duration of surface water in AA		Pei	manent /	Perennia				Se	easonal /	Intermitten	t			Tem	porary/	Epheme	eral	
Aquatic hiding / resting / escape cover	Opt	timal	Adeq	uate	Po	oor	Opti	mal	Ade	quate	Po	or	Opti	mal	Adeo	quate	Po	oor
Thermal cover optimal/ suboptimal	0	S	0	S	0	S	0	S	0	S	0	S	0	S	0	S	0	S
FWP Tier I fish species	1E	.9Н	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6М	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially for	ound in AA:	:								
ii. Modified Rating (NOTE: Modified score ca a) Is fish use of the AA significantly reduced by a current final MDEQ list of waterbodies in need of fishery or aquatic life support, or do aquatic nuis yes, reduce score in i above by 0.1: Modified	a culvert, di TMDL dev ance plant	ke, or other i velopment wi	man-made [°] th listed "Pi	structure or obable Imp	aired Úses	" including	cold or w	arm water	ne If	
b) Does the AA contain a documented spawning comments) for native fish or introduced game fish		her critical ha Y 		e (i.e., sand add 0.1 to t Modifed	he adjusted					
iii. Final Score and Rating: 0 NA	Comme	nts:								
14E. Flood Attenuation: (Applies only to wetle channel or overbank flow, click NA here i. Rating (working from top to bottom, use the	e and proce	eed to 14F.)					s in AA are	e not floode	d from in-	
Estimated or Calculated Entrenchment (Rosger		y entrenched	l - C, D, E	Moderat	ely entrenc	hed – B	Entrench	ned-A, F, G	stream	
1994, 1996) % of flooded wetland classified as forested	75%	stream type		75%	tream type 25-75%	<25%	75%	types 25-75%	<25%	
AA contains no outlet or restricted outlet	1H	011	1							
AA contains unrestricted outlet	-	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L	
	.9H	.8H	.5M	.7M	6M	4M	.3L	.2L	1L	
Slightly Entrenched ER = >2.2			/ Entrenched	I			ntrenched = 1.0 - 1.4			7
C stream type D stream type E stream	type		.41 – 2.2 am type	A	stream type		= 1.0 = 1.4 F stream typ		stream type_	
						}			\	
2 x Bankfull De	epth	Bankfull I	Depth		18444	Tlood-proi afull Widt				
Floodprone width	/ Banl	-			=	Entrend	hment			
ii. Are ≥10 acres of wetland in the AA subject to		ND are man-	-made featu	ıres which r	may be sigr		lamaged b	y floods loo	ated	
within 0.5 mile downstream of the AA (check)? Comments:	Y O	N (e)	lv ootima	tod oo D	tuna atra	om A	\ roooiya	o ourfoo	a watar fra	- m
Unnamed tributary of Big No periodic flooding of unnamed								es suriaci	e water inc	ווו
14F. Short and Long Term Surface War upland surface flow, or groundwater flow. 14G.)	t er Stora g If no wetl	ge: (Applies ands in the	s to wetlar AA are su	nds that flo bject to flo	od or pondooding or p	d from o oonding,	verbank o dick	r in-chanr NA here	el flow, pre and proce	ecipitation, eed to
 i. Rating (Working from top to bottom, u water durations are as follows: P/P = pern 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/F	>	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	1H	.9Н	.8H	.8	н	.6M	.5M	.4M	.3L	.2L
Total do in the mood of point 2 o out of 10 years	.9H	.8H	.7M	.71	м	.5M	.4M	.3L	.2L	.1L

Comments: AA 0.73 acres without potential to support greater than 1ft of surface water

leveis	i]) nent, nutr within A	ient, and			AA re	o deliver pounds a substant	levels of at levels tially important	of sedime such that paired. M ts or tox	and use wents, nutri at other fu linor sedi icants, or	ents, or inctions a mentation	tial	Water deve nutrients with pot compoun	body on lopment s, or toxi ential to ds such	MDEQI for "prob cants or deliver h that other tion, sou	able can AA rece nigh leve er function rces of r	terbodie: uses" reli eives or s ls of sed ons are s utrients	s in nee ated to surround liments, substant or toxic	ed of TMDL sediment, ding land u nutrients, tially impair ants, or sig	se or ed.
		land vege				≥ 70%	eutroph	ication p	resent.	%			≥ 70		ophication	on prese	nt. < 7	0%	=
		oding / p			Yes	<u> </u>	No	Yes	;	No		Yes		No)	Yes	3	No	
AA co	ntains nc	or restr	icted or	itlet	1⊦	1	8H	.7N	1	.5M		.5N		.41	И	.3L		.2L	
AA co	ntains ur	re stricte	ed outle	t	.9⊦		7M	.6N	1	.4M		.4N		.31		.2L		.1L	
Com	ments	: Cover	of veg	in exist	ing rive	erine we	etland >	70%. V	Vetland	conver	ges wit	th unnan	ned trib	utary o	f Big M	uddy, u	nrestri	cted outle	 et.
draina proce i. Ra % Cov	ige, or or ed to 14I ting (wo er of <u>wetla</u>	n the sho .)	reline of m top to nbank or	bottom,	ing wate	er body v	which is	subject	to wave a	action. If	14H de	oints and	pply, cli rating)	ck	NA he	re and			
	see Apper			go	Perm	nanent / F	Perennial		Sea	sonal / Int		t	Te	emporary /		ral			
≥ 65%						1H	+			.91					M				
35-64% < 35%	6					.7M .3L	+			.6N .2L	_				5M 1L				
i. I	_evel of		al Activ		hesis of	wildlife			ratings [c										
	Rating (1		at	E/H	, ileiai v	viidille	M	rating	(140.III.) L										
		Н		Н			Н		N	И									
	E/I			Н			М			л 🖳									
	E/I			_	1														
	M	l		M			M		l L	_									
ii. Rawetlar subsu [see iii	M L N/A ating (Wand comportace out	orking from the control of the contr	he AA; I nal thre ther defi tated comp	o bottom Factor B e rows penitions of	= level of these to cres	e matrix of biolog duration terms].)	below to	vity ratinace wat	at [check ng from a er in the	the fun bove (14 AA, whe	I.i.); Fa re P/P, acres	points an actor C = S/I, and	whether T/E are	or not thas previo	ne AA co ously de	ontains a fined, ar	surfacted and A = '	e or 'absent"	
ii. Rawetlar subsu	M L N/A ating (Wand comportace out	A orking fro onent in t tlet; the fi	he AA; I nal thre ther defi	o bottom Factor B e rows penitions of	= level of ertain to f these t	e matrix of biolog duration terms].)	below to	vity ratir ace wat	at [checking from a er in the	the fun bove (14 AA, whe	I.i.); Fa re P/P, acres	ctor C =	whether T/E are	or not thas previous	ne AA co ously de	ontains a fined, ar	surfacted and A = '	e or	
ii. Rawetlar subsu [see in A B	M/A L N/A Ating (W nd comportace out	orking fro onent in t tlet; the fi ns for furl Vege gh	he AA; I nal threather definated comp Mode	o bottom Factor B e rows penitions of	= level of ertain to f these to cres	e matrix of biolog duration terms].)	below to	vity ratir face wat Vego	at [checking from a er in the Mode	the fun bove (14 AA, whe	I.i.); Fa re P/P, acres	s/I, and	whether T/E are	or not thas previous Vege	ne AA co ously de etated com Mode	ontains a fined, ar ponent <1 erate	a surfacted A = '	ce or 'absent"	
ii. Rawetlar subsu [see in B	M L N/A ating (W nd comporface out	A orking from the content in the con	he AA; I nal three ther defi tated comp Mode Yes	H o bottom Factor B e rows penitions of conent >5 acerate No	= level of ertain to f these to cres	e matrix of biolog duration terms].)	below to	vity ratin face wate Vegetigh	at [checking from a er in the detated comp	the fun bove (14 AA, whe conent 1-5 a	I.i.); Fare P/P,	ow No	whether T/E are	or not the as previous Vege gh No	ne AA co busly de etated com Mode Yes	ontains a fined, ar ponent <1 erate No	a surfacend A = '	ee or 'absent''	
ii. Rawetlar subsu [see ii B C	M L N// ating (W d comported out of the control of	orking froment in tallet; the first for furly Vege gh No	he AA; I inal three ther defi tated comp Mode Yes	b bottom. Factor B e rows penitions of concent >5 a erate.	= level of ertain to f these to cres Log Yes .6M	e matrix of biologo duration terms].)	below trigical action of surf	vity ratin face wat Vegi igh No	at [checkeng from a er in the etated comp Mode Yes	- I the fun bove (14 AA, whe	I.i.); Fa re P/P, acres L Yes	ow No	whether T/E are Hi Yes .8H	veggh No	ne AA co busly de etated com Mod Yes	ontains a fined, ar ponent <1 erate No .4M	a surface of A = '	ee or 'absent"	

i. Discharge Indi The AA is a slope wet Springs or seeps are Vegetation growing di Wetland occurs at the Seeps are present at AA permanently flood	land known or obs uring dorman toe of a natu the wetland	t season/dro ural slope edge		Wetl	neable substra and contains am is a knowr	inlet but no o	ithout underly utlet	ying impeding layer e volume decreases
Wetland contains and Shallow water table at Other:			the surface					
ii. Rating (use the inform	ation from i							I rating)
				THAT IS	RECHARGING	THE GROUN		<u>STEM</u>
<i>Criteria</i> Groundwater Discharge or Re	echarge		P/P 1H		.7M		.4M	None .1L
nsufficient Data/Information	-		- ""		. / ۱۷۱	NA		
omments: Perennial s	saturation s	uspected a	along tributar	N/				
mments: Perennars	Saturation S	suspected a	nong mbutar	y.				
4K. Uniqueness:	n to better-	una tha m=t	riv holow to	rivo at labas	kl tha fireati-	nal nainta	nd rating)	
. Rating (working from to				AA does	not contain	previously	u rating)	
Replacement potential	or matur wetland o	e (>80 yr-old r plant assoc	iation listed	diversity (re types and (#13) is high occiation listed	or contains I as "S2" by	cited ran	s not contain previously e types or associations actural diversity (#13) is
Estimated relative	as "S rare	commo n	TNHP abundant	rare	the MTNHP common	abundant	rare	common abundant
.ow disturbance at AA #12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M .3L
Moderate disturbance at A (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L .2L
ligh disturbance at AA #12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L .1L
omments:						· 		
4L. Recreation/Educatio Is the AA a known or po	tential rec./	ed. site: (ch	eck) Y 🔘	иO	recreation or (if 'Yes' conf	education optinue with the	oportunity) e evaluation;	if 'No' then click NA
·		•	0.0,		study; 🔽 C	Consumptive	rec.; 🔽 No	n-consumptive rec.;
ii. Rating (use the matrix	below to arri	ve at [check] the functiona	I points and	rating)			
Known or Potential Recreation of			r access (no no	rmission roa	uired)		К	nown Potential
Private ownership with gener				ission req				.2H .15H
Private or public ownership w	vithout genera	al public acce	ss, or requiring	permission f	for public acce	ess		.15H .1M
omments:								.1M .05L
IDT-owned site, signs o	of hunting.							
eneral Site Notes								

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): North Cell - Preservation

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	М	.5	1	0.365	
C. General Wildlife Habitat	М	.7	1	0.511	V
D. General Fish Habitat	NA	0	0	0	
E. Flood Attenuation	М	.5	1	0.365	
F. Short and Long Term Surface Water Storage	L	.3	1	0.219	V
G. Sediment/Nutrient/Toxicant Removal	Н	1	1	0.73	V
H. Sediment/Shoreline Stabilization	Н	.9	1	0.657	
Production Export/Food Chain Support	М	.4	1	0.292	
J. Groundwater Discharge/Recharge	М	.7	1	0.511	V
K. Uniqueness	М	.4	1	0.292	
L. Recreation/Education Potential (bonus points)	Н	.2	NA	0.146	
Totals:		5.6	10	4.088	
Percent of Possible Score			56 %		

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)

	ı	II	III	IV
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MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name		2. MDT project# NH 1-10(626) Control						ntrol# 4	058-001			
3. Evaluation Date	6/26/2014	4. Evalua	tors BS	Sandefur	5.	Wetl	and/Site#	(s) S	South Co	ell - Crea	ted	
6. Wetland Location(s	s): T	28N	R 55E	Sec1	21	T		R		Sec2		
Approx Stationing or	Mileposts	~639.75 o	n Hwy 2									
Watershed 10060	0006		Wate	rshed/County	Lower	Misso	ouri River V	Vaters	hed/Ro	osevelt C	o., MT	
7. Evaluating Agency	Conf	fluence for M	DT				8. Wetla	nd siz	re acres			4.17
Purpose of Evaluation	on						How ass				ed e.g. by	
☐ Wetlands potenti	ally affected	d by MDT pr	oject				9. Asses	sssme	nt area			4.17
☐ Mitigation Wetlar	nds: pre-cor	nstruction					(AA) size	•	•	N.4		ODO
☑ Mitigation Wetlar	nds: post co	nstruction					How ass	esseo	ı:	weasure	ed e.g. by	GPS
☐ Other												
10. Classification of	Wetland an	d Aquatic H	abitats in	AA								
HGM Class (Brinson)		ass (Coward			(Coward	lin)	Wate	r Regi	ime		% of AA	
Depressional		ergent Wetla		Excavate			Seasona					100
] [
							1					
12. General Conditio i. Disturbance: (use aquatic nuisance veg	matrix below			opriate respons								
				lanaged in predom	inantly	Land	conditions adj	d, but ma	y be	Land cu	Itivated or he	
Cond	ditions within AA		h c re	atural state; is not ayed, logged, or o converted; does not cads or buildings; deed or ANVS cove	therwise contain and noxious	select subject few r	erately grazed ctively logged; ect to minor cloods or buildid d or ANVS cov	or has bearing; congs; nox	oeen contains cious	placeme hydrolog building	ent, grading,	n; high road or oxious weed
AA occurs and is managed in grazed, hayed, logged, or othe roads or occupied buildings; a	erwise converted	d; does not conta	in	low disturb	2000		low distu	ırbanı		mod	orato dis	turbance
<=15%. AA not cultivated, but may be	moderately graz	ed or haved or		iow distarb	aricc	L	iow disti	ilbalic	JE	-11100	Crate dis	turbance
selectively logged; or has bee placement, or hydrological altr noxious weed or ANVS cover	en subject to relateration; contains	tively minor clear		moderat disturban		mo	oderate d	isturb	ance	hi	ah distur	bance
substantial fill placement, grad	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				ance		high dist	urban	ce	hi	gh distur	bance
Comments: (types of a Constructed wetland ce	ll with contin	ued vegetati	on develo	pment. AA a	djacent to	Hwy 2	2.					
Cirsium arvense	•	, -		-								
iii. Provide brief desc The AA includes the co							of Big Mud	ddy bo	rders th	s 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	_	ent preventing (passive) nal vegetated classes?	Modified Rating
>=3 (or 2 if 1 is forested) dasses	Н	NA	NA	NA
2 (or 1 if forested) classes	М	NA	NA	NA
1 dass, but not a monoculture	М	<no< td=""><td>YES></td><td>L</td></no<>	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

	2 (or 1 if forested) clas	ses	M	NA		NA	NA
1	dass, but not a monoc	ulture	М	<no< td=""><td></td><td>YES></td><td>L</td></no<>		YES>	L
1 class, monocultu	e (1 species comprises	s>=90% of total cove	er) L	NA		NA	NA
Comments: Vegetatio	n class only includ	des emergent w	vetland.				
14A. Habitat for Federa	lly Listed or Pro	posed Threate	ened or Endanger		als:		
Primary or critical habi	at (list species)	O D () s				
Secondary habitat (list	Species)	□ D) s				
Incidental habitat (list	species)	□ D) s				
No usable habitat		y s					
ii. Rating (use the co	ndusions from i a	bove and the n	natrix below to arriv	e at [check] the fur	nctional points and	rating)	1
		l			1		None
Highest Habitat Leve	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
Highest Habitat Leve Functional Points and Rating		sus/primary	doc/secondary	sus/secondary	.3L	.1L	OL
Functional Points and Rating Sources for documented use	1H 1H USFWS databas	.9H e for Roosevelt	8H	7M	3L	.1L	OL.
Functional Points and Rating Sources for documented use	USFWS database	.9H e for Roosevelt S1, S2, or S3 t	.8H County by the Montana Na	.7M	.3L ogram: (not include	.1L	OL.
Functional Points and Rating Sources for documented use 14B. Habitat for plant oin14A above)	USFWS database or animals rated	.9H e for Roosevelt S1, S2, or S3 t d (S) to contain	.8H County by the Montana Nan (check one base	.7M	.3L ogram: (not include	.1L	OL.
Functional Points and Rating Sources for documented use 14B. Habitat for plant of in14A above) i. AA is Documented	USFWS databaser animals rated (D) or Suspected tat (list species)	.9H e for Roosevelt S1, S2, or S3 t d (S) to contain	.8H County by the Montana Na n (check one base	.7M	.3L ogram: (not include	.1L	OL.
Functional Points and Rating Sources for documented use 14B. Habitat for plant oin14A above) i. AA is Documented Primary or critical habitating	USFWS database or animals rated (D) or Suspected tat (list species)	.9H e for Roosevelt S1, S2, or S3 t d (S) to contain D (D (.8H County Dy the Montana Na In (check one base S Blue Heron S	.7M	.3L ogram: (not include	.1L	OL.
Functional Points and Rating Sources for documented use 14B. Habitat for plant oin14A above) i. AA is Documented Primary or critical habitat (list	USFWS database or animals rated (D) or Suspected tat (list species)	.9H e for Roosevelt S1, S2, or S3 t d (S) to contain D (D (.8H County by the Montana Na n (check one base S Blue Heron	.7M	.3L	.1L	OL.
Functional Points and Rating Sources for documented use 14B. Habitat for plant of in14A above) i. AA is Documented Primary or critical habitat (list lincidental habitat (list lincidental habitat (list lincidental primary or critical habitat (list lincidental habitat lincidental habitat lincidental habitat (list lincidental habitat lincident	USFWS database or animals rated (D) or Suspected tat (list species) Species)	.9H e for Roosevelt S1, S2, or S3 t d (S) to contain D (D (D (.8H County by the Montana Na in (check one base S S Blue Heron S S	atural Heritage Productions of (S3)	ogram: (not include	ding species list	OL.
Functional Points and Rating Sources for documented use 14B. Habitat for plant of in14A above) i. AA is Documented Primary or critical habitat secondary habitat (list incidental habitat (list incidental habitat)	USFWS databas or animals rated (D) or Suspecte tat (list species) Species) species)	.9H e for Roosevelt S1, S2, or S3 t d (S) to contain D (D (D (.8H County by the Montana Na in (check one base S S Blue Heron S S	atural Heritage Productions of (S3)	ogram: (not include	ding species list	OL.
Functional Points and Rating Sources for documented use 14B. Habitat for plant of in14A above) i. AA is Documented Primary or critical habitat (list should be incidental habitat (list should be incidental habitat (list should be incidental habitat ii. Rating (use the contact ii	USFWS database or animals rated (D) or Suspected tat (list species) Species) species) anclusions from i and doc/primary	.9H e for Roosevelt S1, S2, or S3 t d (S) to contain D (D (D (D (D (D (D (D	.8H County Dy the Montana Na In (check one base S Blue Heron S S Patrix below to arriv	.7M atural Heritage Proceed on definitions of (\$3)	egram: (not include contained in instructional points and	.1L ding species list uctions):	oL ed

Sources for	
documented use	

Suspected species identified by MTNHP for Roosevelt County

4C. General W i. Evidei					se in t	he AA	(chec	k sub	stanti	al, mo	derate	, or le	ow bas	sed or	supp	ortin	g evide	ence):				
																			Mod	erate	•	
u bstantial (base	d on an	y of the	followin	g [che	ck]):						_			•			[check])					
observations					•		• (•		i)	=				vations	during	g peak u	ise perio	ods			
abundant wild	·						. 0				=		no wildli	•								
presence of e		•	-				ble in th	e surro	unding	area	=		adjacen	•								
interviews wit	h local l	biologis	ts with k	nowle	dge of t	he AA					in	itervie	ws with	ocal bi	ologists	with k	nowledo	ge of the	e AA			
oderate (based o	on anv o	of the fo	llowina	[check	:1):																	
observations	-					uals or	relative	ely few	species	during	peak pe	eriods										
common occu	urrence	of wildli	ife sign s	such a	s scat,	tracks,	nest sti	ructure	s, game	trails,	etc.											
adequate adja	acent up	oland fo	od sour	ces																		
interviews wit	h local l	biologis	ts with k	nowle	dge of t	he AA																
ii. Wildlife hab from #13. For other in terms of permanent/per perms])	class o	cover to	o be con	nside positi	ered ever	enly o	listribu (see #	ted, th #10).	ne mos Abbrev	t and l	east p s for su	revale urface	ent veg water	etate durati	d class ons ar	es m e as f	ust be ollows:	within : : P/P =	20% o	f each	1	
Structural diversity (see				Hig	gh							Mod	erate					Lo	w			
#13) Class cover																						
distribution (all vegetated		Eve	en			Une	ven			Eve	en			Une	ven			Eve	en			
classes)								1		1				1								
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/I	T/E	А	P/P	S/I	T/E	Α	P/P	S/I	T/E	А		
Low disturbance at AA (see #12i)	Е	Е	E	н	Е	Е	Н	н	Е	Н	Н	М	Е	Н	M	M	Е	Н	М	М		
Moderate disturbance at AA (see #12i)	Н	Н	н	н	Н	Н	Н	М	Н	Н	М	М	Н	М	М	L	Н	М	L	L		
High disturbance at AA (see #12i)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L		
iii. Rating (i Evidence of v				ns fro	om i a	nd ii a	above	and t	the ma				ve at				tional	points	and	rating)	
0 1 . 4 . 4 . 4 . 1			-		xcep	tion al		╄		High	1		-		Мо	derat	e		-		Low	_
Substantial					1E					.9	Н					.8H					.7M	
Moderate					.9⊦	1				.7	М					.5M					.3L	
Minimal					.6N	1				.41	м [.2L					.1L	
comments	Seve	eral bi	rd spe	cies	obse	rved o	during	site v	isits.				*									
4D. General I build be used estorable due NA here	by fish to hat	n [i.e., oitat c	fish u onstra	se is ints,	precl	uded	by pe	rched	l culve	ert or o	other b	arrie	r, etc.]. If ti	ne ÅA	is no	t use	d by fi	sh, fis	sh use	e is not	
Habitat Qu	al ity a	nd Kno	own / S	uspe	cted F	ish S	oec ie s	in AA	(usen	natrix t	o arrive	e at [c	heck th	ne fund	ctional	points	and ra	ating)				
Duration of surfac	e water			Б	ama a a a	nt / Dec	onniel					8000	onal / I-	tom=+-	nt				Terr	nor-	/ Enha	ml
<u>in AA</u> Aquatic hiding / re	stina /		0		emane			_		_	- 41 1	seas	onal / In			D :	\top	0 "			/ Epheme	rai Po
escape cover	· · · · · · ·		Optim	al	А	dequat	е	Po	or	O	ptimal		Adeq	uate		Poor		Optim	al	Ade	equate	

i. Habitat Quality and	Known	/ Suspec	ted Fish	Specie	s in A	A (usen	natrix to	arrive a	t[check	the funct	ional po	ints and	drating)					
Duration of surface water in AA		Pe	manent /	Perennia				Se	easonal /	Intermitten	t			Tem	porary/	Epheme	eral	
Aquatic hiding / resting / escape cover	Opt	timal	Adeq	uate	Po	oor	Opti	mal	Ade	quate	Po	or	Opti	mal	Aded	quate	Po	oor
Thermal cover optimal/ suboptimal	0	S	0	S	0	S	0	S	0	S	0	S	0	S	0	S	0	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially fou	nd in AA:								
 ii. Modified Rating (NOTE: Modified score can a) Is fish use of the AA significantly reduced by a current final MDEQ list of waterbodies in need of T fishery or aquatic life support, or do aquatic nuisar yes, reduce score in i above by 0.1: Modified F 	culvert, dike, or MDL developm nce plant or anir	other man-made ent with listed "Pi	structure or obable Imp	aired Úses"	including	cold or wa		e If	
b) Does the AA contain a documented spawning a comments) for native fish or introduced game fish?			•	he adjusted					
iii. Final Score and Rating: 0 NA	Comments: C	losed wetland	cell with	no direct	surface	e water in	ilet or ou	tlet.	
· -	and proceed to	14F.)				s in AA are	not floode	d from in-	
i. Rating (working from top to bottom, use the m Estimated or Calculated Entrenchment (Rosgen		rive at [check] the nched - C, D, E		I points and related the second in the secon		Entrenche	ed-A, F, G	stream	
1994, 1996)		m types	ll .	stream type			types		
% of flooded wetland classified as forested and/or scrub/shrub	75% 25	5-75% <25%	75%	25-75%	<25%	75%	25-75%	<25%	
AA contains no outlet or restricted outlet	1H	.9Н .6М	.8H	.7M	.5M	.4M	.3L	.2L	
AA contains unrestricted outlet	.9H	.5M	.7M	.6M	.4M	.3L	.2L	.1L	
							-		
Slightly Entrenched ER = >2.2		erately Entrenched ER = 1.41 – 2.2				ntrenched = 1.0 - 1.4			
C stream type D stream type E stream ty		B stream type	A	stream type		stream type	G	stream type]
				—	Ę				
2 x Bankfull Dep		kfull Depth		Stille	ood-pron				
Floodprone width	/ Bankfull width			=	Entrend	hment			
ii. Are ≥10 acres of wetland in the AA subject to fl within 0.5 mile downstream of the AA (check)?	ooding AND are	e man-made featu	res which i	may be signi		amaged by	floods loc	ated	
AA is adjacent to unnamed t mitigation area. Flood prone									side
14F. Short and Long Term Surface Wate upland surface flow, or groundwater flow. If 14G.)	er Storage: (A no wetlands	pplies to wetlar n the AA are su	ds that flo bject to flo	ood or pond ooding or p	from ov onding,	erbank or dick	in-chann] NA here	el flow, pre and proce	cipitation ed to
 i. Rating (Working from top to bottom, use water durations are as follows: P/P = perma further definitions of these terms].) 									
Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic	>5 ac	re feet		1.1 to 5 a	icre feet			≤1 acre foot	
flooding or ponding Duration of surface water at wetlands within the AA				Ĭ	ī				

turther 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	.9Н	.8Н	.8Н	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond < 5 out of 10 years	.9Н	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: Constructed cell showed signs of inundation during early growing season. Cell is 4.38-ac with storage potential >1.5ft deep.

 i. Rating (working from top to be = low]) Sediment, nutrient, and toxicant input 	ttom, use	the matrix b	elow to arri	ve at [check		'			<u> </u>			or L
levels within AA	to o compo not su s ou		of sediments, such that oth paired. Minor ts or toxicant ication prese	nutrients, or her functions a sedimentation ts, or signs of ent.	nu nre wi	Waterbody on development utrients, or toxi ith potential to npounds such ajor sedimenta	for "prob cants or deliver h that othe tion, soul of eutro	bable cau AA rece high leve er function rces of n	uses" rela eives or sel els of sedi ons are su	ated to surround ments, ubstant or toxica	sediment, ling land us nutrients, c ially impaire ants, or sig	or ed.
% cover of wetland vegetation in AA Evidence of flooding / ponding in AA		70%		< 70%		≥ 70			Vaa	< 70		_
AA contains no or restricted outlet	Yes	.8H	Yes .7M	No .5M		Yes .5M	.4N		.3L	T	.2L	
AA contains unrestricted outlet	1H					.4M .3L .2L					\blacksquare	
[.9H	.7M	.6M	.4M		.4IVI	.31	-	.2L		.1L	
Comments: Vegetation cover w	ithin const	tructed cell e	estimated to	o be >70%.								
14H Sediment/Shoreline Stabilization	n: (Applies	s only if AA or	curs on or w	vithin the bank	s or a rive	er stream or o	other nat	ural or n	man-mad	le		
drainage, or on the shoreline of a stan								NA he				
proceed to 14I.)	41	and the land of the same	and a strate	1.2 40 6		t d t' \						
i. Rating (working from top to bottom % Cover of wetland streambank or	, use the m	iatrix below to		ieckj the funci urface water adj								
shoreline by species with stability ratings of ≥6 (see Appendix F).	Permar	nent / Perennial		Seasonal / Int	ermittent	Te	emporary /	Epheme	ral			
≥ 65%		1H		.9⊦			.7	М				
35-64%		.7M		.6M	<u> </u>		.5	БМ				
< 35%		.3L		.2L				1L				
Shoreline vegetation	n consist	of Schoenop	electus, Dis	tichlis, and	Гурһа.							
14l. Production Export/Food Cha i. Level of Biological Activity (syr	in Support	t: ildlife and fish	habitat ratin	ngs [check])	Гурhа.							
14l. Production Export/Food Cha i. Level of Biological Activity (syr	in Support othesis of w General Wi	t:	habitat ratin	ngs [check])	Гурһа.							
Comments: 14I. Production Export/Food Cha i. Level of Biological Activity (syr General Fish Habitat	in Support othesis of w General Wi	t: ildlife and fish	habitat ratin	ngs [check])	Гурhа.							
14I. Production Export/Food Cha i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H	in Support othesis of w General Wi	t: iildlife and fish Idlife Habitat M	habitat ratin	ngs [check]) C.iii.)	Гурhа.							
Atting (14D.iii.) Comments: 14I. Production Export/Food Cha i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H H	in Support othesis of w General Wi	t: ildlife and fish Idlife Habitat M	habitat ratin	ngs [check]) 5.iii.) L M	Γypha.							
Comments: 14I. Production Export/Food Cha i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H E/H M H	in Support othesis of w General Wi	t: ildlife and fish Idlife Habitat M H	habitat ratin	ngs [check]) C.iii.) L M M	Гурhа.							
i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H M L N/A ii. Rating (Working from top to botton wetland component in the AA; Factor subsurface outlet; the final three rows [see instructions for further definitions	m, use the is a level of pertain to do of these ter	t: ildlife and fish Idlife Habitat M H M M M matrix below t biological actiuration of sur	habitat ratin Rating (140) o arrive at [c vity rating fro	M L L check] the fundamental to the AA, when	ctional poin	r C = whether	or not thas previo	ne AA co ously de	ontains a fined, an	surfac d A = "	e or	
i. Level of Biological Activity (syrogeneral Fish Habitat Rating (14D.iii.) E/H B/H M L N/A ii. Rating (Working from top to botton wetland component in the AA; Factor is subsurface outlet; the final three rows [see instructions for further definitions A Vegetated component > 5 B High Moderate	m, use the is a level of pertain to do of these ter acres	t: idlife and fish Idlife Habitat M H M M M matrix below t biological actiuration of surirms].)	habitat ratin Rating (14C) o arrive at [c vity rating from a continuous con	ngs [check]) C.iii.) L M L Check] the function above (14 in the AA, when the A	ctional poin I.i.); Factor e P/P, S/I,	r C = whether, and T/E are	or not thas previo	ne AA co busly de etated com	ontains a fined, an ponent <1 a erate	surfac d A = "acre	e or absent"	
i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H H M L N/A ii. Rating (Working from top to bottom wetland component in the AA; Factor I subsurface outlet; the final three rows [see instructions for further definitions]	m, use the is a level of pertain to do of these ter acres	t: iddlife and fish Idlife Habitat M H M M M matrix below t biological actiluration of surims].)	nabitat ratin Rating (140) o arrive at [c vity rating fro ace water in Vegetated igh No Y	ngs [check]) C.iii.) L M M L L Check] the function above (14 in the AA, when the AA, when the AA, when the component 1-5 a	ctional poin I.i.); Factor e P/P, S/I, cres	r C = whether , and T/E are	or not thas previo	ne AA co	ontains a fined, an	surfac d A = "	e or absent"	
i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H M L N/A ii. Rating (Working from top to botton wetland component in the AA; Factor subsurface outlet; the final three rows [see instructions for further definitions A Vegetated component > 5 B High Moderate C Yes No Yes No	m, use the is a level of pertain to do of these ter acres	t: iddlife and fish Idlife Habitat M H M M M matrix below t biological actiluration of surfams].) No Yes 4M 9H	o arrive at [c vity rating from according to the latest tensor of the la	mgs [check]) C.iii.) L M L L Check] the function above (14 of the AA, when th	ctional poin I.i.); Factor e P/P, S/I, cres Low Yes	r C = whether, and T/E are	vegegh No .6M	etated com Mode Yes	ontains a fined, an ponent <1 a erate No	surfac d A = "	e or absent"	
i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H M L N/A ii. Rating (Working from top to botton wetland component in the AA; Factor subsurface outlet; the final three rows [see instructions for further definitions A Vegetated component >5 B High Moderate C Yes No Yes No P/P 1E 7H 8H 5M	m, use the is a level of these teracres Low Yes Mathematical Support of the set of the	t: iddlife and fish Idlife Habitat M H M M M matrix below t biological actiluration of surfams].)	o arrive at [c vity rating frace water in Vegetated igh No Y	mgs [check]) C.iii.) L M L L Check] the function above (14 of the AA, when th	ctional point.i.); Factor re P/P, S/I, Cres Low Yes Low 1 .5M .4M .	r C = whether, and T/E are	vege	ne AA co busly de etated com Mode Yes	ontains a fined, an ponent <1 a erate No	surfac d A = " acre L Yes .3L	e or absent"	
i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H E/H M L N/A ii. Rating (Working from top to botton wetland component in the AA; Factor subsurface outlet; the final three rows [see instructions for further definitions A Vegetated component >5 B High Moderate C Yes No Yes No P/P 1E .7H .8H .5M	m, use the is a level of these ter acres Low Yes .5M	t: iddlife and fish Idlife Habitat M H M M M M matrix below t biological actiluration of surirms].) No Yes .4M .9H	o arrive at [c vity rating frace water in Vegetated igh No Y	ngs [check]) L M M L L Check] the function above (14 in the AA, when the AA,	ctional poin Li.); Factor re P/P, S/I, cres Low Yes I	r C = whether, and T/E are Hi No Yes .3L 8H .2L .7H	vegegh No .6M	etated com Mode Yes .6M	ontains a fined, an sponent <1 a serate No .4M	surfac d A = " acre L Yes .3L	e or absent"	
i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H M L N/A ii. Rating (Working from top to botton wetland component in the AA; Factor I subsurface outlet; the final three rows [see instructions for further definitions A Vegetated component > 5 B High Noderate C Yes No Yes No P/P 1E .7H .8H .5M .5M .6M .3L iii. Modified Rating (NOTE: Modified plant cover, ≤ 15% noxious weed or AN control). a) Is there an average > 50 foot-wide we	m, use the is a level of pertain to do for these terraces Low Yes discore canaly Scover, a level of these terraces acres acr	matrix below t biological actiluration of surms].) How yes AM 9H 3L 8H .2L .7H	habitat ratin Rating (140) o arrive at [c vity rating from the less that subjected to the less that subjected the l	mgs [check]) C.iii.) L M M L L Check] the function above (14 of the AA) when the AA (15 of the AA) Moderate Moderate Moderate AM M	ctional poin I.i.); Factor e P/P, S/I, cres Low Yes .5M .4M .3L chanical mo	C = whether, and T/E are Hi No Yes 3L 8H .1L 6M land Buffer (Volume or clean	vegegh No .5M .4M .4M .4M .4M .4M .4M .4M .4M .4M .4	ea with a	ontains a fined, an sponent <1 a serate No	surfaced A = " acre L Yes .3L .3L	e or absent"	
i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H M L M N/A ii. Rating (Working from top to botton wetland component in the AA; Factor subsurface outlet; the final three rows [see instructions for further definitions A Vegetated component > 5 B High Moderate C Yes No Yes No P/P 1E 7H 8H 5M S/I 9H 6M 7H 4M	m, use the is a level of pertain to do for these terraces Low Yes discore canaly Scover, a level of these terraces acres acr	matrix below t biological actiluration of surms].) How yes AM 9H 3L 8H .2L .7H	habitat ratin Rating (140) o arrive at [c vity rating from the less that subjected to the less that subjected the l	mgs [check]) C.iii.) L M M L L Check] the function above (14 of the AA) when the AA (15 of the AA) Moderate Moderate Moderate AM M	ctional poin I.i.); Factor e P/P, S/I, cres Low Yes .5M .4M .3L chanical mo	C = whether, and T/E are Hi No Yes 3L 8H .1L 6M land Buffer (Volume or clean	Vegegh No .6M .5M .4M	ea with a	ontains a fined, an ponent <1 a grant = 1	surfaced A = " acre L Yes .3L .3L	e or absent"	

i. Discharge Ind The AA is a slope we Springs or seeps are Vegetation growing d Wetland occurs at the Seeps are present at AA permanently flood Wetland contains an Shallow water table a Other:	tland known or ob luring domar e toe of a nat the wetland ded during dr outlet, but no	nt season/dro tural slope edge ought periods o inlet s saturated to	Stream is a known 'losing' stream; discharge volume decreases ope Other:								
i. Ruting (use the inform	idilon nom i			uration at AA	Wetlands FRC		VATER DISCI	HARGE OR WITH	<u>WATER</u>		
Criteria			P/P		S/I		T	None	1		
Groundwater Discharge or R	echarge		1H		.7M		.4M .1L				
nsufficient Data/Information				NA NA							
IK. Uniqueness: Rating (working from to	AA contair	, use the mat ns fen, bog, v re (>80 yr-old	varm springs	AA does cited rar	k] the function not contain pre types and #13) is high of	previously structural	AA does	s not contain pr			
replacement potential	wetland o	or plant associ S1" by the M	iation listed		ciation listed the MTNHP	l as "S2" by		e types or associations ctural diversity (#13) is low-moderate			
stimated relative bundance (#11)	rare	commo	abundant	rare	common	abundant	rare		abundant		
.ow 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		
ligh disturbance at AA #12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L		
4L. Recreation/Education Is the AA a known or portion here and proceed to the categoric Check categoric Other	otential rec. o the overall	/ed. site: (ch summary ar	eck) Y d rating page)	NО	(if 'Yes' cont	tinue with the	evaluation;	if 'No' then clic	_		
ii. Rating (use the matrix	below to arr	ive at [check] the functiona	I points and	rating)						
Cnown or Potential Recreation Public ownership or public e	asement with	general publi		rmission requ	uired)		K	.2H .1	5H		
Private ownership with gener	•	` .	. ,	nermission f	or nublic acco	966		.15H .	IM		
omments:			ss, or requiring	permission	or public acce			.1M .C	5L		
4DT 1 " " "	own huntin	ıg.									
IDT-owned site with kn											

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	М	.5	1	2.085	
C. General Wildlife Habitat	М	.7	1	2.919	
D. General Fish Habitat	NA	0	0	0	
E. Flood Attenuation	М	.5	1	2.085	
F. Short and Long Term Surface Water Storage	Н	.9	1	3.753	V
G. Sediment/Nutrient/Toxicant Removal	Н	1	1	4.17	V
H. Sediment/Shoreline Stabilization	Н	.9	1	3.753	V
Production Export/Food Chain Support	М	.4	1	1.668	
J. Groundwater Discharge/Recharge	М	.7	1	2.919	V
K. Uniqueness	L	.3	1	1.251	
L. Recreation/Education Potential (bonus points)	Н	.2	NA	0.834	
Totals:		6.1	10	25.437	
Percent of Possible Score			61 %		

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)

1 11	III	IV
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MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Big M	luddy			2.	MDT p	roject#	NI	H 1-10(626)		Co	ntrol#	4058-001
3. Evaluation Date 6/26/2	2014 4. Evaluat	ors	B San	defu	ur	5	. Wet	land/Site# (s	South Co	ell - Pres	servatio	n
6. Wetland Location(s): T	28N	R	55E	:	Sec1	21	Т	F	2	Sec2	!	
Approx Stationing or Milep	osts ~639.75 on	Hwy	2									
Watershed 1060006		W	atersh	ed/	County	/ Big M	uddy	Creek, Lower	Missouri, S	heridan	Co.	
7. Evaluating Agency	Confluence for MD	DT						8. Wetland	l size acres	;		1.83
Purpose of Evaluation								How asses	sed:	Measu	ıred e.g	by GPS
☐ Wetlands potentially a	ffected by MDT pro	ject						9. Assesss				1.83
☐ Mitigation Wetlands: p	re-construction							(AA) size (a	•	Measu	red e a	by GPS
✓ Mitigation Wetlands: p	ost construction							71011 40000		oaoa	. ou oigi	2, 0. 0
Other												
10. Classification of Wetla	and Aquatic Ha	bitat	s in A/	4								
HGM Class (Brinson)	Class (Coward	in)		М	lodifier	(Coward	lin)	Water F	Regime		% of	AA
Riverine	Emergent Wetlan	d						Seasonal/I	ntermittent			35
Depressional	Emergent Wetlan	d						Seasonal/I	ntermittent			65
] [
11. Estimated Relative Abu		ımon										
General Condition of A i. Disturbance: (use matrix aquatic nuisance vegetation	below to determine [ci				respons in predom	Pred	ominan	ns for Montana t conditions adjace d not cultivated, bo	nt to (within 50	0 feet of) A	IA.	or heavily grazed
Conditions w	iithin AA		natura hayed conve roads	al sta d, log erted; s or b	ate; is not ged, or o does not uildings;	grazed, therwise	mod sele sub few	derately grazed or ectively logged; or ject to minor cleari roads or buildings d or ANVS cover i	hayed or has been ng; contains ; noxious	or logg placen hydrole buildin	ged; subjeo nent, gradi ogical alte	et to substantial fill ng, clearing, or ration; high road or or noxious weed
AA occurs and is managed in predom grazed, hayed, logged, or otherwise or roads or occupied buildings; and noxi <=15%.	converted; does not contain	1	lo	ow c	disturb	ance		low disturb	ance	mod	derate	disturbance
AA not cultivated, but may be modera selectively logged; or has been subjet placement, or hydrological alteration; noxious weed or ANVS cover is <=30	ct to relatively minor clearing contains few roads or build				oderat turban		m	oderate dist	urbance	h	niah dis	turbance
AA cultivated or heavily grazed or log substantial fill placement, grading, cle high road or building density; or noxid >=30%.	earing, or hydrological alter		hi	gh d	disturb	ance	_	high disturb	ance	h	nigh dis	turbance
Comments: (types of distur Grazing eliminated within AA.					ion.							
ii. Prominent noxious, aqua	tic nuisance, other	exo	tic spe	cie	s:							
Cirsium arvense							4-4					
iii. Provide brief descriptive AA encompasses existing em southern parcel.								Big Muddy C	reek and ac	ljacent l	owland	ocated in the

13. Structural Diversity: (based on number of "Cowardin" vegetated classes present [do not include unvegetated classes], see #10 above) Modified Initial Is current management preventing (passive) Existing # of "Cowardin" Vegetated Classes in AA Rating existence of additional vegetated classes? Rating >=3 (or 2 if 1 is forested) classes NA NΑ NA Н 2 (or 1 if forested) classes NA NΑ NA Μ 1 dass, but not a monoculture Μ L YFS> <NO 1 class, monoculture (1 species comprises>=90% of total cover) NA NΑ NA L Comments: Emergent vegetation class. 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) \bigcirc D \bigcirc S Secondary habitat (list Species) Incidental habitat (list species) ✓ S No usable habitat ii. Rating (use the condusions from i above and the matrix below to arrive at [check] the functional points and rating) sus/incidental Highest Habitat Level doc/primary sus/primary doc/secondary sus/secondary doc/incidental None Functional Points and .9H .8H 1H .7M .3L .1L 0L Rating USFWS database for Roosevelt County Sources for documented use 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) OD S \bigcirc D \bigcirc S Blue Heron (S3) Secondary habitat (list Species) Incidental habitat (list species) \bigcirc D \bigcirc S No usable habitat

ii. Rating (use the conc	lusions from i a	bove and the m	atrix below to arriv	e at [check] the fun	ctional 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	OL
S2 and S3 Species: Functional Points and Rating	9H	.7M	6M	.5M	.2L	1L	OL

Sources for documented use

MTNHP tracker for Roosevelt County

																			Mod	erate			
ı bstantial (based	on any	of the	followir	ng [che	ck]):						Minin	nal (b	ased or	n any of	the follo	owing	[check]):					
observations of	of abunda	ant wild	dlife #s	or high	n specie	s divers	sity (dur	ring ar	ny period	d)	fe	w or n	o wildlii	e obser	vations	during	g peak ι	use per	iods				
abundant wild	life sign s	such a	s scat,	tracks,	nest st	ructures	s, game	trails	, etc.		☐ lit	tle to r	no wildli	fe sign									
presence of ex	ktremely	limiting	g habita	at featu	res not	availabl	le in the	e surro	ounding	area	sp	oarse a	adjacen	t upland	food s	ources	3						
interviews with	n local bid	ologist	s with I	knowle	dge of th	ne AA					\prod_{in}	tervie	ws with	local bid	ologists	with k	nowled	ge of th	ne AA				
•		Ţ													Ü								
oderate (based of observations of																							
observations of			•	•				•		•		eriods											
common occu	rrence of	fwildlif	fe sign	such a	s scat, t	racks, r	nest stru	ucture	s, game	trails, e	tc.												
adequate adja	cent upla	and foo	od sour	rces																			
interviews with	local bid	ologist	s with I	knowle	dge of th	ne AA																	
i. Wildlife habiton #13. For other in terms opermanent/perecents])	class co of their p	ver to	be control	onside positi	red ev on of th	enly di ne AA	stribut (see #	ed, th	ne mos Abbrev	t and le	east pr	revale ırface	ent veç e water	durati	d class ons are	es m	ust be ollows	within : P/P =	20% o =	f each			
tructural iversity (see 13)				Hig	gh							Mod	erate					L	ow				
Class cover listribution (all regetated		Eve	ın			Unev	ren			Eve	n			Une	ven			Εν	/en				
lasses) Duration of urface water in ≥ 0% of AA	P/P	S/I	T/E	А	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/I	T/E	А			
ow disturbance t AA (see #12i)	Е	Е	Е	Н	Е	Е	Н	Н	Е	Н	Н	М	Е	Н	М	М	Е	Н	М	М			
loderate isturbance at AA see #12i)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	Н	М	М	L	н	М	L	L			
High disturbance at AA (see #12i)	М	М	М	L	М	м	L	L	М	м	L	L	м	L	L	L	L	L	L	L			
ii. Rating (L Evidence of w							bove a	and t	the ma	И	/ildlife		ive at		rating	g (ii)		point	s and i	rating)			
Substantial			╬	E	xcept					High			╁			derat	e I		╅		Low	1	_
					1E					.91	1		-			8H					.7M	_	_
Vioderate Vinimal			_		.9H			_		.71	И					5M	╄		_		.3L	_	_
VIIIIIIIII					.6M					.4N	1				_	2L					.1L		
omments																							_
ID. General Fould be used be storable due for NA here a	oy fish o habi and pro	[i.e., tat co oceed	fish u onstra I to 14	ise is aints, 4E.)	preclu or is n	ided b	by persired f	rchec	d culve a mar	ert or o nagem	ther b	arrie erspe	er, etc. ective]. If th	ne AA as fis	is no h ent	ot use trappe	d by f ed in a	ish, fis	h use	is not		ı
		d Kno	wn / S	Suspe	cted Fi	sh Sp	ecies	in AA	(usen	natrix to	arrive	at [c	heck t			points	and ra	ating)					
	e water			Б.	.me===	+ / Dan-	nniel					Cc	anal / I	+ - HE					т	norce	/ Enhance	rol	
Duration of surface on AA Aquatic hiding / res			Optim		ermanen	t / Pere		Po	or	Ор	timal	Seas	onal / Ir Adeq			Poor		Opti			/ Epheme		Po
Habitat Qua Duration of surface in AA Aquatic hiding / reseascape cover Thermal cover opt suboptimal	sting /	(Optim			lequate		Po O	or S	Op O	timal S	Seas				_	S	Opti					Po

Permanent / Perennial						Seasonal / Intermittent					Temporary / Ephemeral						
Opt	timal	Adeq	uate	Po	oor	Opti	mal	Ade	quate	Po	or	Opti	mal	Adeo	quate	Po	oor
0	s	0	S	0	S	0	S	0	s	0	S	0	S	0	s	0	S
1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L
	O 1E 9H .8H	Optimal O S 1E 9H 8H .8H 7.7M	Optimal Adequation O S O 1E	Optimal Adequate O S O S 1E .9H .8H .7M .6M .9H .8H .7M .6M .5M	Optimal Adequate Po O S O S O 1E .9H .8H .7M .6M .5M .9H .8H .7M .6M .5M .5M .8H .7M .6M .5M .5M	Optimal Adequate Poor O S O S O S 1E .9H .8H .7M .6M .5M .5M .9H .8H .7M .6M .5M .5M .4M .8H .7M .6M .5M .5M .4M	Optimal Adequate Poor Optimal O S O S O 1E .9H .8H .7M .6M .5M .5M .9H .9H .8H .7M .6M .5M .5M .5M .8H .8H .7M .6M .5M .5M .4M .7M	Optimal Adequate Poor Optimal O S O S O S 1E .9H .8H .7M .6M .5M .9H .8H .9H .8H .7M .6M .5M .5M .8H .7M .8H .7M .6M .5M .5M .4M .7M .6M	Optimal Adequate Poor Optimal Adequate O S O S O S O 1E .9H .8H .7M .6M .5M .9H .8H .7M .9H .8H .7M .6M .5M .5M .8H .7M .6M .8H .7M .6M .5M .5M .4M .7M .6M .5M	Optimal Adequate Poor Optimal Adequate O S O S O S O S 1E .9H .8H .7M .6M .5M .9H .8H .7M .6M .5M .9H .8H .7M .6M .5M .5M .8H .7M .6M .5M .8H .7M .6M .5M .5M .4M .7M .6M .5M .4M	Optimal Adequate Poor Optimal Adequate Poor O S O S O S O S O 1E .9H .8H .7M .6M .5M .9H .8H .7M .6M .5M .9H .8H .7M .6M .5M .5M .8H .7M .6M .5M .4M .8H .7M .6M .5M .5M .4M .7M .6M .5M .4M .4M	Optimal Adequate Poor Optimal Adequate Poor O S O S O S O S O S 1E .9H .8H .7M .6M .5M .9H .8H .7M .6M .5M .4M .9H .8H .7M .6M .5M .5M .8H .7M .6M .5M .4M .4M .8H .7M .6M .5M .5M .4M .7M .6M .5M .4M .4M	Optimal Adequate Poor Optimal Adequate Poor Optimal O S O	Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate Poor Optimal O S O	Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate O S <td>Optmal Adequate Poor Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate O S<td>Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate Poor O S O</td></td>	Optmal Adequate Poor Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate O S <td>Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate Poor O S O</td>	Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate Poor Optimal Adequate Poor O S O

Sources used for i	identifvina fish sp.	potentially fe	ound in A	A :								
ii. Modified Ratir a) Is fish use of th current final MDE fishery or aquatic yes, reduce score	e AA significantly in Q list of waterbodie life support, or do	reduced by a es in need or aquatic nuis	a culvert, of f TMDL de ance plan	dike, or other r evelopment wit	man-made i th listed "Pr	structure oi robable Imp	aired Úses	" includin	g cold or wa		e If	
b) Does the AA co comments) for nat				ther critical ha		•	he adjusted	•	g area, etc. i or iia abo			
iii. Final Score a	nd Rating: 0 NA	1	Commo	ents:								
14E. Flood Atte	enuation: (Applies eank flow, click			ect to flooding ceed to 14F.)	via in-chan	nnel or over	bank flow.	If wetland	ds in AA are	not flooded	d from in-	
Estimated or Cal 1994, 1996)	ng from top to bott	ment (Rosge		ow to arrive at tly entrenched stream type	- C, D, E	Moderat	points and ely entrencl stream type	hed – B	Entrench	ed-A, F, G s	stream	
% of flooded wet and/or scrub/shr	tland classified as ub	forested	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%	
AA contains no	outlet or restricte	d outlet	_1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L	
AA contains unr	estricted outlet		.91	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L	
	Slightly Entrench	- d		Madagatah	Entrenched				intrenched			╗
	ER = >2.2	1		ER = 1.	.41 – 2.2			EF	R = 1.0 - 1.4			
C stream type	D stream type	E stream	n type	B strea	am type	A	stream type		F stream type		stream type	
within 0.5 mile do	2 x of wetland in the A wnstream of the A inamed tributa	A (check)?	/ Bar wid of flooding A Y	Bankfull Dankfull th AND are man-	made featu		Bank = may be sign	Entren ratio	chment	/ floods loca	ated	
upland surface 14G.) i. Rating (Wo water durations	orking from top to s are as follows:	water flow. o bottom, u P/P = pern	If no we	tlands in the atrix below to	AA are su carrive at	ubject to flo [check] th	ooding or postion	ponding	dicks] NA here g. Abbrevia	and proce ations for s	ed to surface
Estimated maximun wetlands within the	n acre feet of water co AA that are subject to	ontained in		>5 acre feet			1.1 to 5	acre feet			≤1 acre foot	
Duration of surface	water at wetlands with	hin the AA	P/P	S/I	T/E	P/F	,	S/I	T/E	P/P	S/I	T/E
			1H	.9Н	.8H	.8	н	.6M	.5M	.4M	.3L	.2L

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	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	.9Н	.8Н	.8Н	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond < 5 out of 10 years	.9Н	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: AA is 1.83 acres without potential to support greater than 0.5 feet of surface water.

low])	ttom, use ti	ne matrix t	below to al	rrive at [check] t	<u></u>			
ediment, nutrient, and toxicant input evels within AA	to de compou not sub	eliver levels inds at levels estantially im des of nutrie	of sediments s such that o paired. Mind	use with potential s, nutrients, or other functions are or sedimentation, ants, or signs of	develop nutrients, with poter compounds	ody on MDEQ list of v pment for "probable of or toxicants or AA re- ntial to deliver high le- s such that other func mentation, sources o of eutrophica	causes" related oceives or surror vels of sediment of substitutions are substitutions or to	tosediment, unding land us its, nutrients, o antially impair
cover of wetland vegetation in AA	≥ 7	70%	Theatron pres	< 70%		≥ 70%		70%
vidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
A contains no or restricted outlet	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
A contains unrestricted outlet	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L
Cover greater than					ar a river etreer	m or other petural o	r man mada	
IH Sediment/Shoreline Stabilizatio ainage, or on the shoreline of a stan- oceed to 14I.) Rating (working from top to bottom	ding water bo	ody which is	s subject to	wave action. If 14	H does not app	oly, click NA h	nere and	
Cover of wetland streambank or oreline by species with stability ratings	,			surface water adjace				
≥6 (see Appendix F).	Permane	ent / Perennia	I	Seasonal / Interm	ittent	Temporary / Epher	meral	
65%		1H		.9H		.7M		
i-64%		.7M		.6M		.5M		
AA includes shoreli	ne of unna	.3L med tributa	ary of Big I	.2L Muddy Creek.		.1L		
AA includes shoreli mments: 14I. Production Export/Food Cha i. Level of Biological Activity (syr General Fish Habitat	in Support: thesis of wild	med tributa	h habitat rat	Muddy Creek.		.1L		
AA includes shoreling the manner of the mann	in Support: thesis of wild	med tributa	h habitat rat	Muddy Creek. tings [check]) 4C.iii.)		.1L		
AA includes shoreli Mathematical AA includes shoreli 14I. Production Export/Food Cha i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H H	in Support: thesis of wild	med tributa	h habitat rat	Muddy Creek. tings [check]) 4C.iii.) L		.1L		
AA includes shoreling the manner of the mann	in Support: thesis of wild	med tributa	h habitat rat	Muddy Creek. tings [check]) 4C.iii.) M M		.1L		
AA includes shorelic promments: 14I. Production Export/Food Cha i. Level of Biological Activity (syr) General Fish Habitat Rating (14D.iii.) E/H M H L	in Support: thesis of wild	med tributa	h habitat rat	Muddy Creek. tings [check]) 4C.iii.) L		.1L		
AA includes shoreling the production of the prod	in Support: In Su	dlife and fisl dlife Habita M H M M M waterix below biological actration of sur	h habitat rat t Rating (14 to arrive at tivity rating trace water	Muddy Creek. tings [check]) 4C.iii.) L M M L L [check] the function above (14I.i. in the AA, where I	; Factor C = wh P/P, S/I, and T/I	rating. Factor A = a hether or not the AA E are as previously o	contains a sur defined, and A	face or
AA includes shoreling the shore in the shore	in Support: thesis of wild General Wild m, use the m 3 = level of b pertain to du of these tern acres Low	ddife and fisl dlife Habita M M M M matrix below piological ac ration of sui	to arrive at tivity rating frace water	Muddy Creek. tings [check]) 4C.iii.) L M L [check] the function from above (141.i. in the AA, where leted component 1-5 acreements and the second seco	r; Factor C = wh P/P, S/I, and T/I	rating. Factor A = anether or not the AA E are as previously of Vegetated or High Mr.	contains a sur defined, and A omponent <1 acre loderate	face or = "absent"
AA includes shorelimments: AA includes shoreliments: AA includes sho	in Support: In Su	dlife and fisl	to arrive at tivity rating face water	Muddy Creek. tings [check]) 4C.iii.) L M M L L [check] the function from above (141.i. in the AA, where I ted component 1-5 acree Moderate Yes No N	r; Factor C = wh P/P, S/I, and T/I	rating. Factor A = anether or not the AA E are as previously o	contains a surdefined, and A omponent <1 acre oderate No Ye	face or = "absent"
AA includes shorelimments: 14I. Production Export/Food Cha i. Level of Biological Activity (syr General Fish Habitat Rating (14D.iii.) E/H M L M L N/A Rating (Working from top to bottor etland component in the AA; Factor Eubsurface outlet; the final three rows ee instructions for further definitions Vegetated component >5 High Noderate Yes No Yes No P 1E 7H 8H 5M	m, use the m are Low Yes Low A	med tributa dlife and fisl H M M M M M Inatrix below piological acreation of sur	to arrive at tivity rating rate water Vegetat	Muddy Creek. tings [check]) 4C.iii.) L M M L L [check] the function from above (141.i. in the AA, where I ted component 1-5 acre Moderate Yes No Y	r; Factor C = wh P/P, S/I, and T/I s Low es No	rating. Factor A = a hether or not the AA E are as previously of Vegetated or High Mr. Yes No Yes	contains a sur defined, and A omponent <1 acre oderate No Ye	face or = "absent"
AA includes shoreling the production Export/Food Chai. Level of Biological Activity (synogeneral Fish Habitat Rating (14D.iii.) E/H M L M N/A Rating (Working from top to botton etland component in the AA; Factor Exposurface outlet; the final three rows ee instructions for further definitions Vegetated component >5 High No Vegetated component >6 High Noderate Yes No P 1E .7H .8H .5M	m, use the mare level of these term acres	med tributa dlife and fisl H M M M M M M M M M M M M M M M M M M	to arrive at tivity rating face water Vegetat High No .6M	Muddy Creek. tings [check]) 4C.iii.) M M L L [check] the function above (14I.i. in the AA, where I ted component 1-5 acre Moderate Yes No 7H AM AM AM AM AM AM AM AM AM A	r, Factor C = when the control of th	rating. Factor A = a hether or not the AA E are as previously of Vegetated or High Mr Yes No Yes 8H .6M .6M	contains a sur defined, and A omponent <1 acre oderate No Ye .4M .3 .3L .3	ace or = "absent" Low s No L 2L L
A see instructions for further definitions be instructed by the second because instructions for further definitions are instructed by the second because instructions for further definitions because instructions for further definitions are instructed by the second because in the second because	m, use the mare level of these term acres	ddife and fisl dife Habita M H M M M M M M M M M M M M M M M M M	to arrive at tivity rating face water Vegetat High No .5M	Muddy Creek. tings [check]) 4C.iii.) L M M L [check] the function above (141.i. in the AA, where Interpretate the component 1-5 acreem to the component 1-5 acreem	r, Factor C = Who P/P, S/I, and T/I Low Low Low SM .3L	rating. Factor A = anether or not the AA E are as previously of the No Yes No Y	contains a sur defined, and A omponent <1 acre oderate No Ye .4M .3 .3L .3	ace or = "absent" Low S No L .2L

AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "\$2" by the MTNHP Stimated relative abundance (#11) Low disturbance at AA #12) ABH	Criteria Groundwater Discharge or I nsufficient Data/Information Dimments: 4K. Uniqueness:				
Groundwater Discharge or Recharge The property of the functional points and rating The provided recreation of education opportunity	Groundwater Discharge or Insufficient Data/Information Domments: 4K. Uniqueness:				
Groundwater Discharge or Recharge 1H	Groundwater Discharge or Insufficient Data/Information Domments: 4K. Uniqueness:				
AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP the MTNHP abundant rare common a	omments: 4K. Uniqueness:				
### A Contains fen, bog, warm springs or mature (>80 yr-obl) forested wetland or plant association listed as "S1" by the MTNHP the MTNHP the MTNHP the MTNHP studender (#11) **Owd disturbance at AA #121) **Out disturbance at AA #121) **In Manager of M	4K. Uniqueness:				
as "S1" by the MTNHP the MTNHP the MTNHP ownership with early by the MTNHP t	eplacement potential				
Abundance (#11) Low disturbance at AA (#12i) 1H 19H 18H 17M 17M 15M 14M 13L 2IH 18H 18H 18H 18H 18H 18H 18H 1	wetland or plant a				
SH SH SH SH SM SM SM SM					
A (#12i) 9H .8H .7M .7M .5M .4M .4M .3L .2L .2L .1I .3L .3L .2L .1I .3L .3L .2L .1I .3L					
AL. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity) Is the AA a known or potential rec./ed. site: (check) Y					
AL. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity) Is the AA a known or potential rec./ed. site: (check) Y	-				
Conown or Potential Recreation or Education Area Public ownership or public easement with general public access (no permission required) Private ownership with general public access (no permission required)	here and proceed ii. Check categor				
Private ownership with general public access (no permission required)	Known or Potential Recreation				
.15H .1M					
rivate or public ownership without general public access, or requiring permission for public access					
.1M .05L	invate of public ownership				
1DT-owned site with known hunting.	omments:				
eneral Site Notes	omments: IDT-owned site with k				

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	М	.5	1	0.915	
C. General Wildlife Habitat	М	.7	1	1.281	
D. General Fish Habitat	NA	0	0	0	
E. Flood Attenuation	М	.4	1	0.732	
F. Short and Long Term Surface Water Storage	L	.3	1	0.549	
G. Sediment/Nutrient/Toxicant Removal	Н	.9	1	1.647	
H. Sediment/Shoreline Stabilization	Н	1	1	1.83	
Production Export/Food Chain Support	М	.7	1	1.281	
J. Groundwater Discharge/Recharge	М	.7	1	1.281	
K. Uniqueness	М	.4	1	0.732	
L. Recreation/Education Potential (bonus points)	Н	.2	NA	0.366	
Totals:		5.8	10	10.614	
Percent of Possible Score			58 %		

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 I	
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Big Muddy Creek 2014 Wetland Mitiga	tion Monitoring Report
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Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring Big Muddy Creek Roosevelt County, Montana



Taken in 2011

Bearing: North



Photo Point 1 – Photo 1 Bearing: North



Location: SE property corner Northern Parcel Taken in 2013



Photo Point 1 – Photo 1 Bearing: North

Location: SE property corner Northern Parcel Taken in 2014



Photo Point 1 - Photo 2 Bearing: Northwest

Location: SE property corner Northern Parcel Taken in 2011



Photo Point 1 - Photo 2

Bearing: Northwest

Location: SE property corner Northern Parcel Taken in 2013



Photo Point 1 - Photo 2

Bearing: Northwest

Location: SE property corner Northern Parcel



Bearing: Southwest





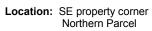
Bearing: Southwest



Location: SE property corner Northern Parcel Taken in 2013



Photo Point 1 – Photo 3



Bearing: Southwest Taken in 2014



Taken in 2011

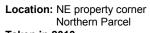
Photo Point 2 - Photo 1 Bearing: North

Location: NE property corner Northern Parcel Taken in 2011



Photo Point 2 - Photo 1

Bearing: North



Taken in 2013



Photo Point 2 - Photo 1

Bearing: North

Location: NE property corner Northern Parcel



Photo Point 2 – Photo 2 Bearing: East



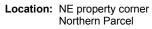
Photo Point 2 – Photo 2 Bearing: East



Location: NE property corner Northern Parcel Taken in 2013



Photo Point 2 – Photo 2 Bearing: East



Taken in 2014



Taken in 2011

Photo Point 2 – Photo 3 Bearing: South

Location: NE property corner Northern Parcel Taken in 2011

Northern Parcel



Photo Point 2 – Photo 3 Bearing: South





Photo Point 2 – Photo 3

Bearing: South

Location: NE property corner Northern Parcel Taken in 2014



Photo Point 2 – Photo 4 Bearing: West



Location: NE property corner Northern Parcel Taken in 2011



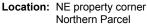
Photo Point 2 – Photo 4 Bearing: West



Northern Parcel Taken in 2013



Photo Point 2 – Photo 4



Bearing: West Taken in 2014



Photo Point 3 - Photo 1

Bearing: East

Location: NW property corner Northern Parcel

Taken in 2011



Photo Point 3 - Photo 1

Bearing: East



Location: NW property corner Northern Parcel

Taken in 2013



Photo Point 3 - Photo 1

Bearing: East

Location: NW property corner Northern Parcel



Photo Point 3 – Photo 2

Bearing: South

Location: NW property corner Northern Parcel

Taken in 2011



Photo Point 3 – Photo 2

Bearing: South



Taken in 2013



Photo Point 3 – Photo 2

Bearing: South

Location: NW property corner Northern Parcel

Taken in 2014



Photo Point 3 - Photo 3

Bearing: West

Location: UT of Big Muddy Northern Parcel

Taken in 2011



Photo Point 3 – Photo 3

Bearing: West

Location: UT of Big Muddy Northern Parcel Taken in 2013

Photo Point 3 – Photo 3

Bearing: West



Location: UT of Big Muddy Northern Parcel



Photo Point 3 - Photo 4

Bearing: North

Location: UT of Big Muddy Northern Parcel

Taken in 2011



Photo Point 3 – Photo 4

Bearing: North



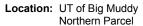
Location: UT of Big Muddy Northern Parcel

Taken in 2013



Photo Point 3 – Photo 4

Bearing: North



Taken in 2014



Photo Point 4 - Photo 1

Bearing: North

Location: SW property corner Northern Parcel

Taken in 2011



Photo Point 4 - Photo 1

Bearing: North

Location: SW property corner Northern Parcel

Taken in 2013



Photo Point 4 - Photo 1

Bearing: North

Location: SW property corner Northern Parcel



Photo Point 4 – Photo 2

Bearing: Northeast

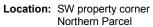
Location: SW property corner Northern Parcel

Taken in 2011



Photo Point 4 – Photo 2

Bearing: Northeast



Taken in 2013



Photo Point 4 – Photo 2

Bearing: Northeast

Location: SW property corner Northern Parcel

Taken in 2014



Photo Point 4 – Photo 3

Bearing: Northwest

Location: Existing wetland Northern Parcel

Taken in 2011



Photo Point 4 – Photo 3

Bearing: Northwest

Location: Existing wetland Northern Parcel

Taken in 2013



Photo Point 4 – Photo 3

Bearing: Northwest

Location: Existing wetland Northern Parcel





Photo Point 5 – Photo 1 Location: Veg Com 9, Southern Parcel Bearing: 221 deg Taken in 2013



Photo Point 5 – Photo 1 Location: Veg Com 9, Southern Parcel Bearing: 221 deg Taken in 2014













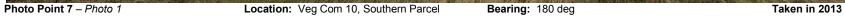




Photo Point 7 – Photo 1 Location: Veg Com 10, Southern Parcel Bearing: 180 deg Taken in 2014



Transect 1 – Start

Bearing: 220 deg



Transect 1 – Start

Bearing: 220 deg



Taken in 2013



Transect 1 – Start

Bearing: 220 deg

Location: Veg Com 8 Northern Parcel Taken in 2014



Transect 1 – Finish

Bearing: 0 deg

Location: Veg Com 2 Northern Parcel Taken in 2011

Location: Veg Com 1 Northern Parcel

Taken in 2011



Transect 1 - Finish

Bearing: 0 deg

Location: Veg Com 2 Northern Parcel Taken in 2013



Transect 1 – Finish

Bearing: 0 deg

Location: Veg Com 8 Northern Parcel



Transect 2 – Start

Bearing: 130 deg

Location: Veg Com 5 Southern Parcel Taken in 2012



Transect 2 – Start

Bearing: 130 deg





Transect 2 – Start

Bearing: 130 deg

Location: Veg Com 4 Southern Parcel





Transect 2 – Finish

Bearing: 310 deg

Location: Veg Com 1 Southern Parcel Taken in 2012



Transect 2 – Finish

Bearing: 310 deg

Location: Veg Com 8 Southern Parcel Taken in 2013



Transect 2 – Finish

Bearing: 310 deg

Location: Veg Com 8 Southern Parcel

Taken in 2014



Data Point 1 – BM-1w

Bearing: 10 deg



Taken in 2014



Data Point 2 - BM-2w

Bearing: 180 deg



Location: Veg Comm 12

Taken in 2014



Data Point 3 - BM-3w

Bearing: 100 deg Taken in 2014



Data Point 4 – BM-3u

Location Veg Comm 8

Bearing: 0 deg

Big Muddy Creek 2014 Wetland Mitigation Monitoring Report					
	Ria Muddy Creek	2014 Wetland	Mitigation	Monitoring Report	r

Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring Big Muddy Creek Roosevelt County, Montana

