MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2010

Woodson Creek
Ringling, Meagher County, Montana

Prepared for:

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

Prepared by:

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and

MORRISON MAIERLE, INC.
An Employee-Owned Company

December 2010

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CCI Project No: MDT.004

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1. INTRODUCTION

The 2010 Woodson Creek Wetland Mitigation Monitoring Report presents the results of the third year of wetland monitoring at the Woodson Creek project. The site was not monitored in 2009 during discussions with the USACE concerning propsed revisions for the site. The mitigation site was constructed in 2006 in Meagher County in the southeast portion of the Missouri-Sun-Smith watershed (Watershed #7). Approximately 50 acres of wetland credit was to be provided to the Montana Department of Transportation (MDT) through a credit purchase agreement to compensate for wetland impacts resulting from MDT highway and bridge reconstruction projects in the watershed. Woodson Creek was constructed on the Ringling Land and Cattle Company property. The goal of the project was to restore Woodson Creek to its historical configuration, to improve wetland hydrology, and to create wetlands. The mitigation area was projected to provide a maximum of 75.14 acres of palustrine emergent and scrub-shrub wetland within the boundaries of the 105-acre site (PBS&J 2008).

The project occurs at an elevation of approximately 5,390 feet above mean sea level (amsl) and is located three miles northeast of Ringling, Montana, in Meagher County (Figure 1). The Woodson Creek site is shown on the Hamen, Montana, US Geological Survey 7.5 minute topographic quadrangle in Sections 9 and 16, Township 6 North, Range 8 East. The approximate universal transverse mercator (UTM) coordinates (NAD83) for the center of the site are (Zone 12N) 5,126,147 Northing, 520,656 Easting.

Figures 2 and 3 of Appendix A show the onsite monitoring activity locations and mapped site features, respectively. The MDT Wetland Mitigation Site Monitoring Forms, US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (Environmental Laboratory 1987), and the 1999 MDT Montana Wetland Assessment Forms (Berglund 1999) are included in Appendix B. Representative photographs are shown in Appendix C and the project plan sheet is presented in Appendix D**.**

Seven different crediting areas were developed originally with individual performance standards. Credit ratios were 1:1 for restoration and creation and 1.5:1 for rehabilitation once the performance standards were achieved (PBS&J 2008). The maximum credit acres on the site were projected to be 73.3 acres. The existing performance standards for Woodson Creek were amended on March 29, 2010, as referenced in a USACE letter from Todd Tillenger dated August 6, 2010 (USACE 2010a). The amendment addressed the current method of awarding credits from a pass/fail system to a credit-reduction based methodology. The functional lift standard required an assurance of a functional lift with the most favorable credit ratios awarded if wetland assessment areas achieve a Category II status or better. The functional lift was to be assessed using the 1999 MDT Montana Wetland Assessment Method (MWAM) (Berglund 1999). The Primary Standards for performance as amended in 2010 are listed verbatim below.

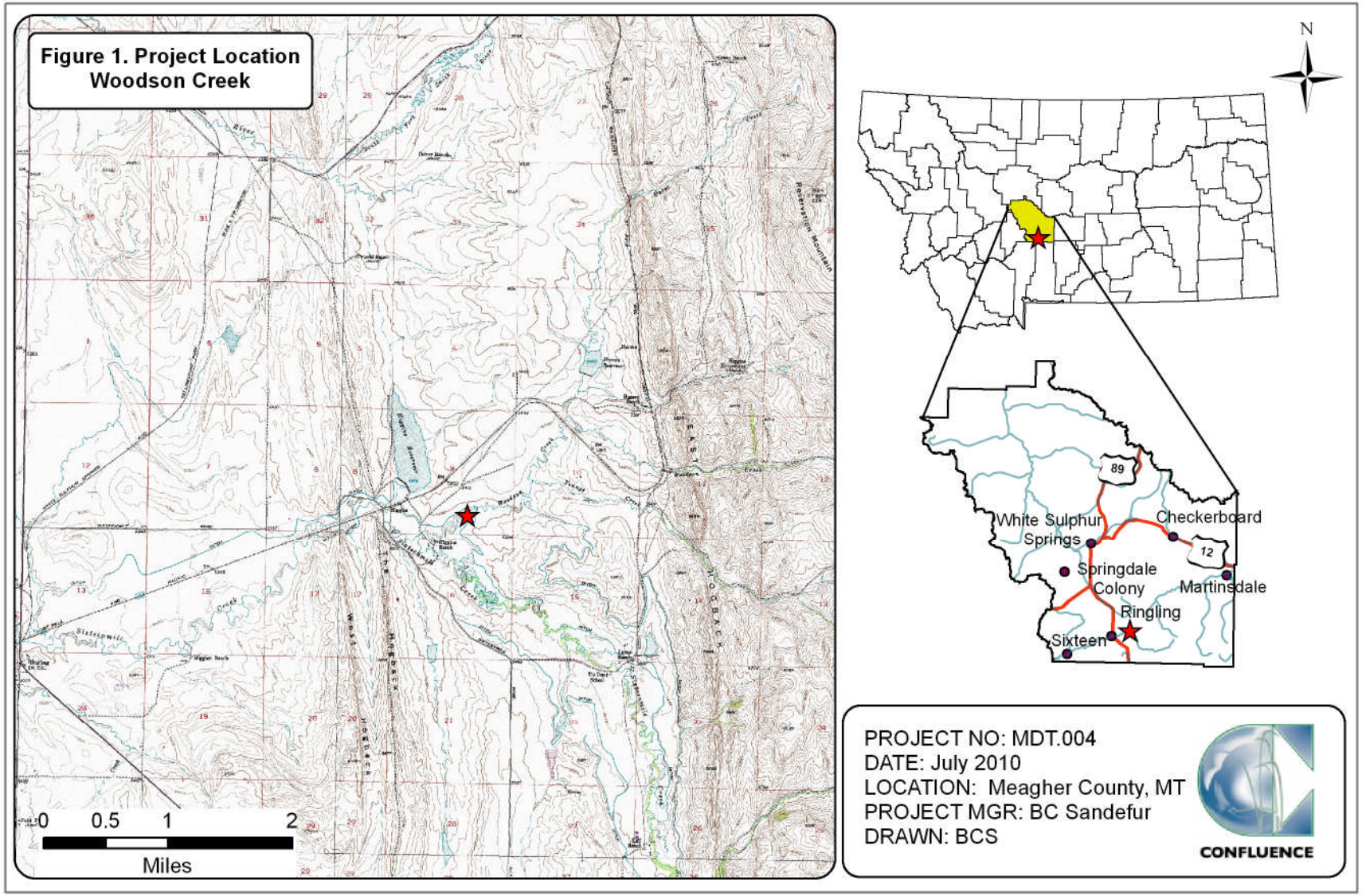

Figure 1. Project location Woodson Creek Mitigation Site.

1. Meet all three wetland criteria (as defined in 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987).

2. Maximum noxious weed coverage is not to exceed 5 percent.

3. Soil saturation in the upper 12 inches of the soil profile for a minimum of 12.5 percent of the growing season.

4. Aerial coverage of all plant species must be at least 80 percent and requires a 2-year survival period; bare ground shall not exceed 20 percent aerial coverage.

5. Permanent open water lacking persistent emergent vegetation or aquatic bed vegetation will comprise less than 15 percent of the total wetland project area and no single body is to exceed 3 acres.

6. Achieve a Category II functional rating.

2. METHODS

The site was monitored on July 20, 2010. Information contained on the mitigation monitoring form and wetland data form was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix B). Monitoring activity locations were mapped using a global positioning system (GPS) (Figure 2, Appendix A). Information collected included wetland delineation, wetland/open water/aquatic habitat boundary mapping, vegetation community mapping, vegetation transect monitoring, woody species survival monitoring, soil data collection, hydrology data collection, bird and wildlife use documentation, photographs, functional assessment, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

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 (usually 14 days or more or 12.5 percent) during the growing season” (Environmental Laboratory 1987). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered wetlands. The growing season is defined for purposes of this report as the number of days where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit (Environmental Laboratory 1987). The growing season recorded for the meteorological station at White Sulphur Springs 2, Montana (248930), extends from May 23 to September 17, approximately 117 days (NRCS 2010). Areas defined as wetlands would require 15 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria and performance standards.

Hydrological indicators as outlined on the wetland data form were documented at five data points established within the project area. Hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on the electronic wetland data form (Appendix B). Hydrologic assessments allowed evaluation of mitigation goals addressing inundation/saturation requirements.

Groundwater levels were measured in six monitoring wells in 2010. Soil pits excavated during the wetland delineation were also used to evaluate groundwater levels within 18 inches of the ground surface. The data was recorded electronically on the wetland data form (Appendix B).

2.2. Vegetation

The boundaries of general dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on aerial photographs. The percent cover of dominant species within a community type was estimated and recorded using the following ranges that are listed verbatim on the mitigation monitoring form: 0 (<1 percent%), 1 (1-5 percent), 2 (6-10 percent),3 (11-20 percent), 4 (21-50 percent),and 5 (>50 percent) (Appendix B).

Temporal changes in vegetation were evaluated through annual assessments of static belt transects (Figure 2, Appendix A). Vegetation composition was assessed and recorded on three vegetation belt transects approximately 10 feet wide and 526 feet (Transect 1), 582 feet (Transect 2), and 378 feet (Transect 3) long (Figure 2, Appendix A). The transect location was recorded with a GPS unit. Spatial changes in the dominant (based on percent cover) vegetation communities were recorded along the stationed transect. The percent cover of each vegetation species within the belt was estimated using the same cover ranges listed above (Appendix B). Photographs were taken at the transect endpoints during the monitoring event (Appendix C).

The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix C). The noxious weed species identified are color-coded. The locations are denoted with the symbol “+”, “▲”, or “■” representing 0 to 0.1 acre, 0.1 to 1.0 acre, or greater than 1.0 acre in extent, respectively. Cover classes are represented by T, L, M, or H, for less than 1 percent, 1 to 5 percent, 2 to 25 percent, and 25 to 100 percent, respectively, as listed on Figure 3 (Appendix A). Observations of live willow saplings were recorded annually. The lack of information on post-construction plant numbers and locations precluded the calculation of survival rates.

2.3. Soil

Soil information was obtained from the *Soil Survey for Meagher County* and *in situ* soil descriptions accessed from the Natural Resource Conservation Service (NRCS) official soil description website (USDA 2010). Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the 1987

Wetland Delineation Manual. A description of the soil profile, including hydric indicators when present, was recorded on the USACE wetland determination form for each profile (Appendix B).

2.4. Wetland Delineation

Waters of the US including jurisdictional wetlands and other special aquatic sites were delineated throughout the project area in accordance with criteria established in the 1987 Wetland Delineation Manual. In order to delineate a representative area as a wetland, the technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology, as described in the 1987 Wetland Manual, must be satisfied. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). A Routine Level-2 On-site Determination Method (Environmental Laboratory 1987) was used to delineate wetland areas within the project boundaries. The information was recorded electronically on the wetland data form (Appendix B).

Consultation with the USACE determined that the 1987 manual should continue to be used at this site where baseline wetland conditions had been established prior to 2008. The use of the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010b) was not required.

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 this 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. In a delineation of existing wetlands, areas are determined to be upland when any one of the parameters does not exhibit positive wetland indicators. In the case of constructed mitigation wetlands, hydric soils do not have to be present based on the timeframe required for soil development. The wetland boundary was surveyed to resource-grade accuracy. Wetland areas were estimated using geographic information system (GIS) methodology.

2.5. Wildlife

Direct observations 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 (Appendix B). Direct sampling methods, such as snap, live, and pitfall traps were not used. A comprehensive animal species list collected from 2007 through 2010 was compiled for the project (Section 3.5).

2.6. Functional Assessment

Pre-construction, 2007, 2008, and 2010 wetland conditions were assessed using the 1999 MDT MWAM (Berglund 1999). Field data for this assessment were

collected during the site visit. A Functional Assessment Form was completed for each wetland or group of wetlands called Assessment Areas (AA) (Appendix B).

2.7. Channel Cross-Sections

Two permanent cross-sections established in 2007 were monitored in 2008 and 2010. The cross-sections were located near the north and south ends of the project area along Woodson Creek.

2.8. Streambank Erosion Pins

Streambank erosion pins were installed in 2007 at two locations. Smooth, 4-foot long, 1/4 inch steel bars were pounded horizontally into streambanks at the outside of meander bends where high bank erosion rates were expected. The pins were located at the upstream and downstream ends of the stream channel. The lengths of the pins protruding from the bank were measured each year and subsequently reinserted until the end was flush with the bank slope. Any remaining protrusions were measured.

2.9. Photo Documentation

Monitoring at photo points provided supplemental information documenting wetland condition, trends, current land use surrounding the site, upland buffer, and the vegetation transects. Photographs were taken at established photo points throughout the mitigation site and at transect end points (Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 2, Appendix A).

2.10. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2010 monitoring season. Points were collected using WAAS-enabled differential corrected satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, imported into GIS, and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph and then digitized. Site features and survey points that were mapped included fence boundaries, photograph points, transect enpoints, wetland boundaries, and vegetation community boundaries.

2.11. Maintenance Needs

Channels, engineered structures, fencing, and other features were examined during the site visit for obvious signs of breaching, damage, or other problems. This was a cursory examination and did not constitute an engineering-level structural inspection.

3. RESULTS

3.1. Hydrology

The average total annual precipitation at the White Sulphur Springs 2 station recorded from December 1978 to October 2010 was 12.36 inches with the majority of precipitation occurring in April, May, June, and July. Totals mean precipitation in 2008 and 2009 were 12.76 and 13.22 inches, respectively.

Precipitation rates recorded from January to June in 2009, 2010 and mean total were 6.48 inches, 7.64 inches, and 7.32 inches, respectively. Average participation for 2010 was slightly above the mean average for the period of record.

Surface water and groundwater are the primary sources of wetland hydrology at the site. Six out of the seven groundwater monitoring wells installed in spring 2008 were monitored in 2008 (Table 1). The Sixteen-mile Ditch was cleaned in fall 2007, resulting in decreased seepage from the ditch to the west parcel (PBS&J 2008).

Groundwater levels were measured in 2010 with a Solinst Water Level Meter. The 2008 and 2010 data are presented in Table 1. Groundwater measurements recorded between years were similar. Groundwater depths in MW-1 through MW-5 were less than 1 foot below the ground surface (bgs). The groundwater depth at MW-6 was 2.1 feet bgs.

Table 1. Groundwater depths measured below the ground surface (bgs) in July 2008 and August 2010 at the Woodson Creek Wetland Mitigation Site.

Well Number	2008 Depth (ft.) bgs	Well Number	2010 Depth (ft.) bgs
MW-1	-0.02	MW-1	0
MW-2	0.53	MW-2	0.52
MW-3	0.48	MW-3	0.45
MW-4	0.30	MW-4	0.32
MW-5	0.68	MW-5	0.71
MW-6	1.95	MW-6	2.10

Approximately 30 percent of the site was inundated. The average surface water depth across the site was estimated at 0.2 feet with a range in depths of 0 to 3 feet. The surface water depth at the emergent vegetation and open water boundary was 1 foot.

Data points WC-1 through WC-5 were established to determine the wetland/upland boundary (Figure 2, Appendix A and wetland data forms, Appendix B). All of the data points except WC-4 were located in areas that met all three wetland criteria. The groundwater table at WC-1, located in the northwest corner, at 1 inch bgs. Saturation was present at 4 inches bgs. Data point W-2 located on the southwest boundary exhibited a water table at 10 inches bgs and saturation at 2 inches bgs. Data point WC-3 was located in the northeast corner of the project. Where the water table was present at 10 inches bgs and saturation was present at 6 inches bgs. High water tables and saturation within 12 inches of the ground surface were positive indicators of wetland hydrology. The southeast corner of the site where WC-5 was located

was drier. Drainage patterns provided an indication of wetland hydrology. There were no positive indicators of wetland hydrology at WC-4.

3.2. Vegetation

Eighty vegetation species identified on the site in 2007, 2008, and 2010 are presented in Table 2 and on the monitoring form (Appendix B). Five vegetation communities were identified in 2010 (Figure 3, Appendix A), Community Type 1 — *Alopecurus arundinaceus*/Mixed graminoids Wetland, Community Type 2 — *Phalaris arundinaceus/Juncus balticus* Wetland, Community Type 3 — *Alopecurus arundinaceus* Wetland, Community Type 4 — Upland, and Community Type 6 — *Phalaris arundinaca/Carex* species (spp.) Wetland. Open water (represented by the number 5 on Figure 3 of Appendix A) was characterized by surface water ranging in depth from one to three feet and by minimal vegetation cover at the edge of the water.

Wetland community Type 1 — *Alopecurus arundinaceus*/Mixed graminoids was identified in 2008. This community is the largest on the site and encompasses the majority of Woodson Creek. The vegetation is dominated by creeping foxtail (*Alopecurus arundinaceus*) with one to five percent each of clustered field sedge (*Carex praegracilis*), few-flowered shooting star (*Dodecatheon pulchellum*), Canada bluegrass (*Poa compressa*), small-fruited bulrush (*Scirpus microcarpus*), wooly sedge (*Carex lasiocarpa*), tufted hairgrass (*Deschampsia cespitosa*), Baltic rush (*Juncus balticus*), silverweed (Potentilla *anserina*), and red clover (*Trifolium pratense*).

Community Type 2 — *Phalaris arundinaceus/Juncus balticus* Wetland was named mixed graminoids in 2008. The community is currently dominated by reed canary grass (*Phalaris arundinaceus*) and Baltic rush with one to five percent of several graminoid species. The community was identified primarily near Woodson Creek and the southern portion of the site. Wetland community Type 3 – *Alopecurus arundinaceus* occurred as a monoculture (greater than 90 percent cover) primarily in the west parcel. Wetland Type 6 – *Phalaris arundinaceus/Carex* spp. was identified along the southwest side of the mitigation area in an abandoned historic meander.

Upland community Type 4 was identified in the upland perimeter of the south half of the site. The dominant species were smooth brome (*Bromus inermis*), redtop (*Agrostis stolonifera*), and creeping foxtail.

The open water community (represented by number 5 on Figure 3, Appendix A) characterized semi-permanently flooded areas that encompassed trace amounts of water sedge (*Carex aquatilis*), Nebraska sedge (*Carex nebrascensis*), creeping spikerush (*Eleocharis palustris*), wooly sedge, beaked sedge (*Carex utriculata*), Baltic rush, common mint (*Mentha arvensis*), and small yellow water buttercup (*Ranunculus gmelinii*).

Table 2. Comprehensive vegetation species list identified from 2007, 2008, and 2010 for the Woodson Creek Wetland Mitigation Site.

Scientific Name	Common Name	Region 9 Indicator Status[1]
Achillea millefolium	yarrow,common	FACU
Agropyron cristatum	crested wheatgrass	NL
Agropyron repens	quackgrass	FACU
Agrostis alba [2]	**redtop**	FACW
Agrostis exarata	bentgrass,spike	FACW
Agrostis stolonifera	bentgrass,spreading	FAC+
Alopecurus aequalis	foxtail,short-awn	OBL
Alopecurus arundinaceus	foxtail,creeping	NI
Aster spp. (purple)	purple aster spp.	NL
Aster spp. (yellow)	yellow aster spp.	NL
Beckmannia syzigachne	sloughgrass,American	OBL
Bromus inermis	smooth brome	NL
Carduus nutans	musk thistle	NL
Carex aquatilis	**sedge,water**	OBL
Carex lanuginosa	**sedge,wooly**	OBL
Carex lasiocarpa	sedge,woolly-fruit	OBL
Carex nebrascensis	sedge,Nebraska	OBL
Carex praegracilis	sedge,clustered field	FACW
Carex rostrata (utriculata)*	beaked sedge	OBL
Chenopodium album	goosefoot,white	FAC
Cicuta douglasii	water-hemlock,Western	OBL
Cirsium arvense	thistle,creeping	FACU+
Cynoglossum officinale	gypsy-flower	NL
Deschampsia cespitosa	hairgrass,tufted	FACW
Descurainia sophia	common tansymustard	NL
Distichlis spicata	saltgrass,seashore	FAC+
Dodecatheon pulchellum	shooting-star,few-flower	FACW
Eleocharis palustris	spikerush,creeping	OBL
Elymus trachycaulus	slender wheatgrass	NL
Epilobium spp.		NL
Equisetum hyemale	horsetail,rough	FACW
Galium aparine	bedstraw,catchweed	FACU
Glycyrrhiza lepidota	licorice,American	FAC+
Halogeton glomeratus	saltlover	NL
Helianthus annuus	sunflower,common	FACU+
Hieracium spp.		NL
Hordeum jubatum	barley,fox-tail	FAC+
Iris missouriensis	iris,Rocky Mountain	FACW+
Juncus balticus	rush,Baltic	OBL
Juncus effusus	rush,soft	FACW+
Juncus filiformis	rush,thread	FACW+
Lactuca serriola	lettuce,prickly	FAC-
Melilotus officinalis	sweetclover,yellow	FACU
Mentha arvensis	mint,field	FAC
Muhlenbergia richardsonis	muhly,mat	FACW
Panicum virgatum	switchgrass	FAC+
Penstemon laricifolius	**larch-leaf beardtongue**	NL
Phalaris arundinacea	grass,reed canary	FACW

[1]Region 9 (Northwest) (Reed 1988).
[2]New species identified in 2010 are listed in bold type.
*Commonly accepted name not included on 1988 list.

Table 2 (Continued). Comprehensive vegetation species list identified from 2007, 2008, and 2010 for the Woodson Creek Wetland Mitigation Site.

Scientific Name	Common Name	Region 9 Indicator Status[1]
Phleum alpinum	timothy,alpine	FAC
Phleum pratense	timothy	FACU
Plantago major	plantain,common	FAC+
Poa compressa	bluegrass,Canada	FACU
Poa palustris	bluegrass,fowl	FAC
Polygonum amphibium	smartweed,water	OBL
Potentilla anserina	silverweed	OBL
***Potentilla fruticosa*[2]**	**cinquefoil,shrubby**	FAC-
Potentilla spp.		NL
Ranunculus gmelinii	**butter-cup,small yellow water**	FACW
Ranunculus spp.		NL
Rumex crispus	dock,curly	FACW
Salix exigua	willow,sandbar	OBL
Salix spp.		NL
Salsola kali	thistle,Russian	FACU
Scirpus acutus	bulrush,hard-stem	OBL
Scirpus microcarpus	bulrush,small-fruit	OBL
Sisyrinchium montanum	blue-eye-grass,strict	NI
Solidago spp.		NL
Sonchus arvensis	sowthistle,field	FACU+
Sporobolus cryptandrus	dropseed,sand	FACU
Taraxacum officinale	dandelion,common	FACU
Thlaspi arvense	penny-cress,field	NI
Trifolium longipes	clover,long-stalk	FAC-
Trifolium pratense	clover,red	FACU
Trifolium repens	clover,white	FACU+
Triglochin maritimum	**arrow-grass,seaside**	OBL
Triglochin spp.		NL
Typha latifolia	cattail,broad-leaf	OBL
Valeriana edulis	valerian,edible	FAC
Vicia sativa	**vetch,common**	UPL

[1]Region 9 (Northwest) (Reed 1988).
[2]New species identified in 2010 are listed in **bold** type.
*Commonly accepted name not included on 1988 list.

Vegetation data were recorded on three transects (Monitoring Forms, Appendix B) and summarized in Tables 3 to 5 and Charts 1 to 6. Transect 1 was located in the northeast corner of the site. The transect data is summarized on Table 3 and Charts 1 and 2. Photos at the transect end points are shown on pages C-5 and C-6 of Appendix C. The transect intervals intersected wetland community Types 1 and 2 and open water (5). Hydrophytic plants dominated 88 percent of the vegetated transect intervals. Open water encompassed 12 percent of the transect intervals. The extent of open water and Type 1 increased in 2010.

Table 3. Data summary of Transect 1 for 2007, 2008, and 2010.

Monitoring Year	2007	2008	2010
Transect Length (feet)	526	526	526
Vegetation Community Transitions along Transect	2	4	7
Vegetation Communities along Transect	3	3	2
Hydrophytic Vegetation Communities along Transect	3	3	2
Total Vegetative Species	31	20	22
Total Hydrophytic Species	20	18	15
Total Upland Species	11	2	7
Estimated % Total Vegetative Cover	90	90	90
% Transect Length Comprising Hydrophytic Vegetation Communities	100*	100*	88
% Transect Length Comprising Upland Vegetation Communities	0	0	0
% Transect Length Comprising Unvegetated Open Water	6*	6*	12
% Transect Length Comprising Bare Substrate	0	0	0

*Values as presented in 2008 monitoring report

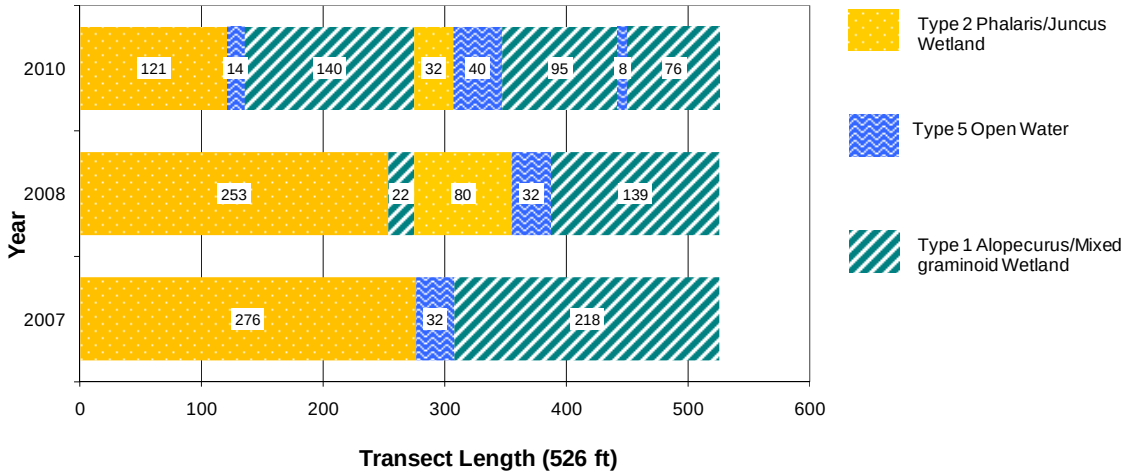

Chart 1. Transect map of vegetation communities from start (0 feet) to end (526 feet) of Transect 1 for 2007, 2008, and 2010.

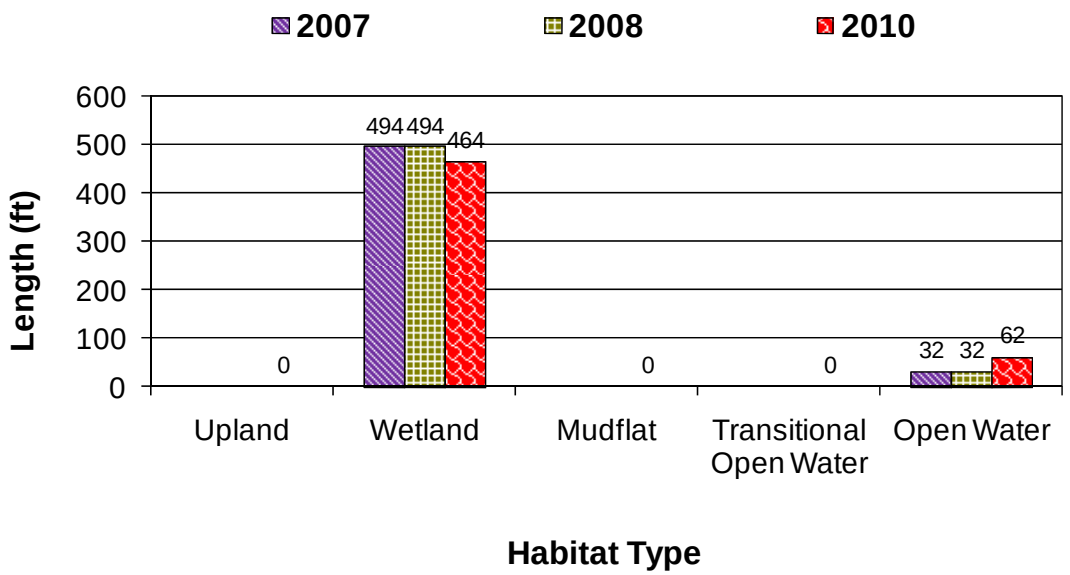

Chart 2. Length of vegetation communities within Transect 1 for 2007, 2008, and 2010.

The data from Transect 2 is summarized in Table 4 and graphed in Charts 3 and 4. Photos taken at the transect endpoints are shown on pages C-5 and C-6 of Appendix C. The transect was located near the center of the site and intersected Type 1 and Type 2 wetland communities. The communities identified on the transect shifted from a predominance of Type 2 in 2008 to a predominance of Type 1 in 2010. One hundred percent of the transect was dominated by hydrophytic plant species.

Table 4. Data summary of Transect 2 for 2007, 2008, and 2010.

Monitoring Year	2007	2008	2010
Transect Length (feet)	**583**	**583**	**583**
Vegetation Community Transitions along Transect	0	2	2
Vegetation Communities along Transect	1	2	2
Hydrophytic Vegetation Communities along Transect	1	2	2
Total Vegetative Species	17	13	15
Total Hydrophytic Species	14*	11	12
Total Upland Species	2	2	3
Estimated % Total Vegetative Cover	95	90	90
% Transect Length Comprising Hydrophytic Vegetation Communities	100	100	100
% Transect Length Comprising Upland Vegetation Communities	0	0	0
% Transect Length Comprising Unvegetated Open Water	2	0	0
% Transect Length Comprising Bare Substrate	0	0	0

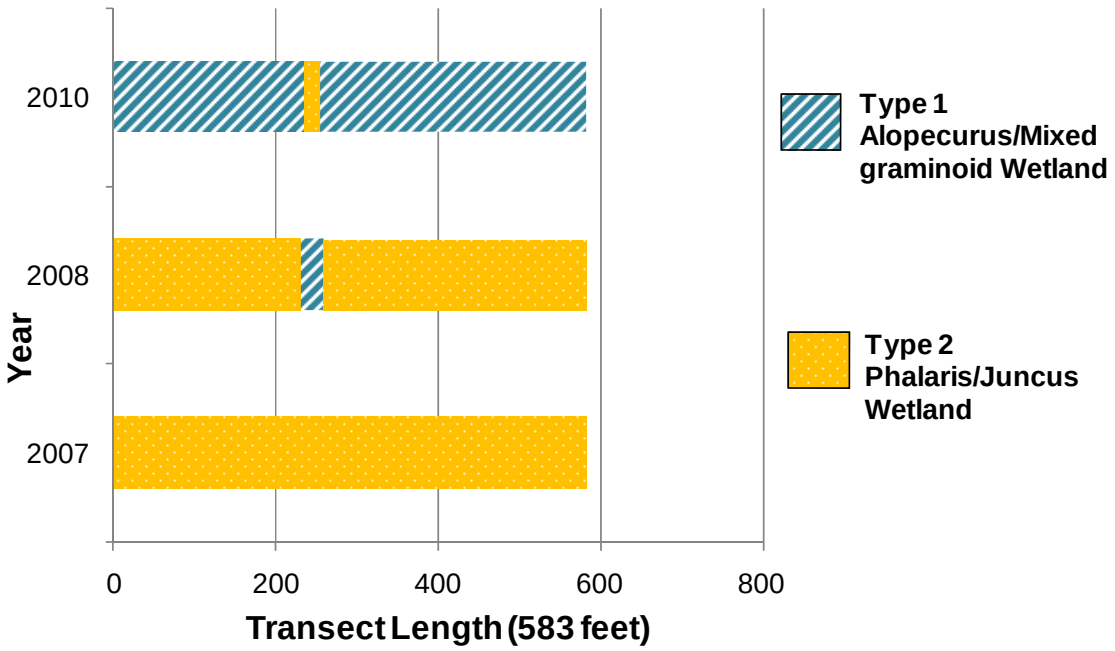

Chart 3. Transect map of vegetation communities from start (0 feet) to end (583 feet) of Transect 2 for 2007, 2008, 2010.

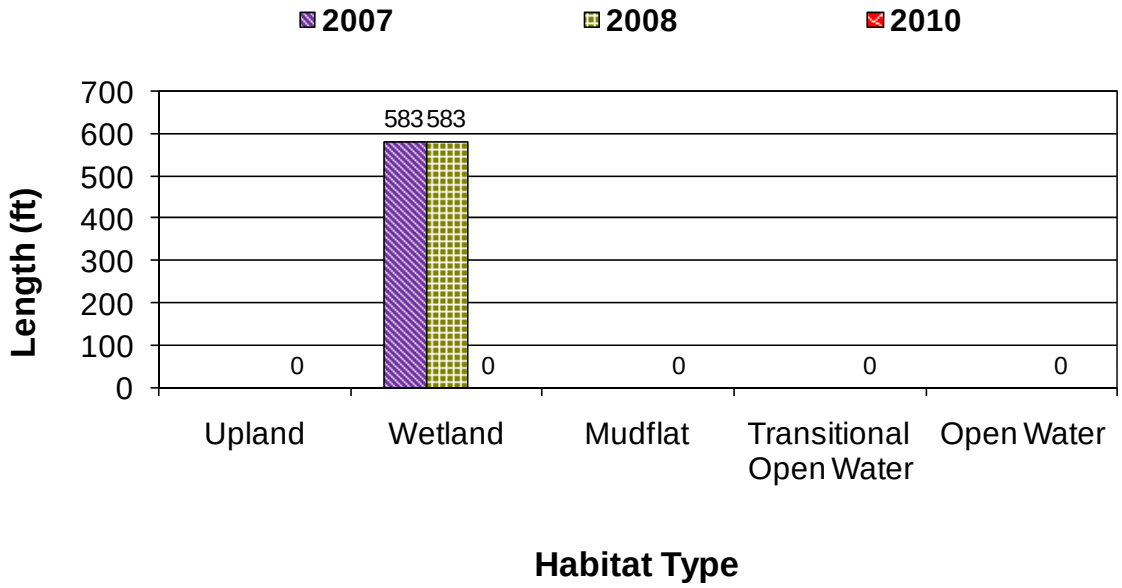

Chart 4. Length of vegetation communities within Transect 2 for 2007, 2008, and 2010.

Table 5 and Charts 5 and 6 present the data collected on Transect 3. Photographs of the transect endpoints are shown on pages C-5 and C-6 of Appendix C. One wetland community, Type 3, dominated Transect 3. The transect was located in the northwest corner of the site where a monoculture of reed canary grass persists. The transect length measured in 2010 with a tape extended from established pins was 353 feet. The length measured in previous years was 378.

Table 5. Data summary of Transect 3 for 2007, 2008, and 2010.

Monitoring Year	2007	2008	2010
Transect Length (feet)	378	378	353
Vegetation Community Transitions along Transect	0	0	0
Vegetation Communities along Transect	1	1	1
Hydrophytic Vegetation Communities along Transect	1	1	1
Total Vegetative Species	3	3	4
Total Hydrophytic Species	2	3	3
Total Upland Species	1	0	1
Estimated % Total Vegetative Cover	80	90	90
% Transect Length Comprising Hydrophytic Vegetation Communities	100	100	100
% Transect Length Comprising Upland Vegetation Communities	0	0	0
% Transect Length Comprising Unvegetated Open Water	0	0	0
% Transect Length Comprising Bare Substrate	0	0	0

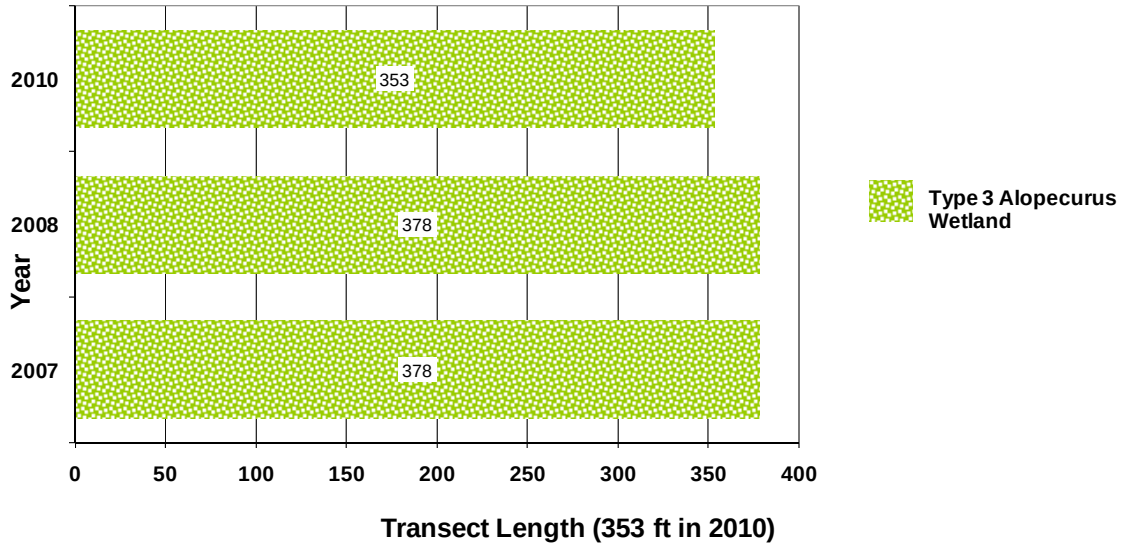

Chart 5. Transect map of vegetation communities from start (0 feet) to end (353 feet) of Transect 3 for 2010. (Note: The transect length measured in 2007 and 2008 was 378 feet).

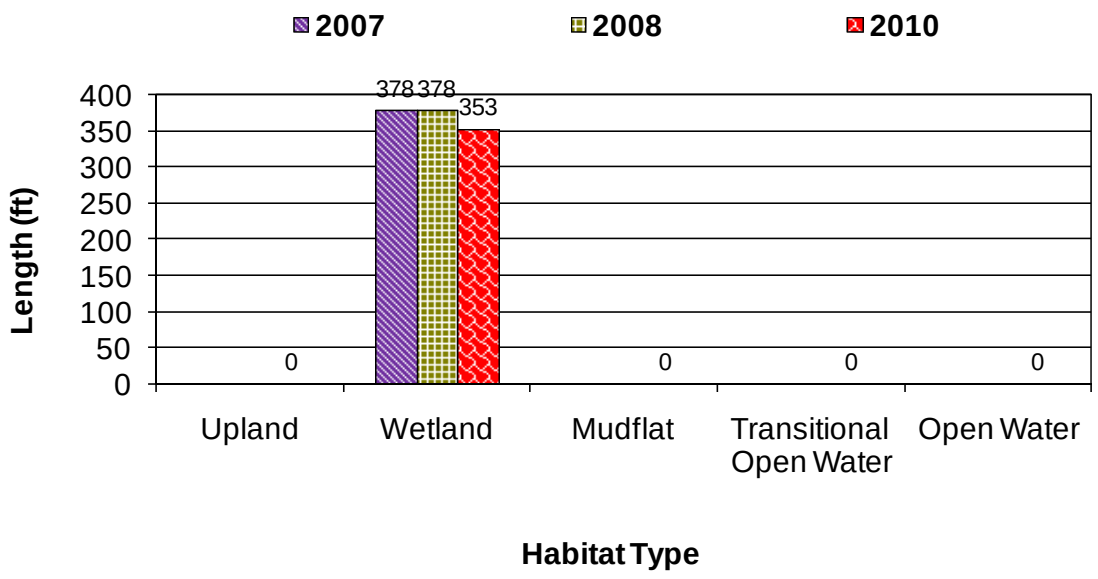

Chart 6. Length of vegetation communities within Transect 3 for 2007, 2008, and 2010.

Four infestations of Canada thistle (*Cirsium arvense*) were mapped within the site boundaries in 2010 (Figure 3, Appendix A). The infestations were each less than 0.1 acre in size and represented 1 to 5 percent of total vegetation cover with the areas of infestation.

A total of 69 willow cuttings were observed in 2007. Creeping foxtail obscured many of the plants. Two willow species, sandbar and a second unidentified willow, were observed. The condition of the cuttings in 2008 was poor. Sixty-eight percent (47 cuttings) survived to 2008. Ten willow stems in poor condition and twelve green stems with leaves were observed in 2010.

3.3. Soil

Soil survey data for Meagher County identified three primary map units within the mitigation area boundaries, the Fairway series (2A), the Soapcreek-Fairway series (3A), and the Typic Fluvaquents-Fluvaquentic Haplaquolls, 0 to 4 percent slopes (501B). The Fairway and Soapcreek series are somewhat poorly drained soils formed in alluvium. The taxonomic class for both is a frigid Fluvaquentic Haplustolls. The three soil map units are hydric. The soil data observed within the test pits in 2010 generally confirmed the mapped soil unit.

The soil profile at WC-1 revealed a dark brown silty clay loam (10 YR 3/2) with redoximorphic concentrations (10 YR 3/4) in the pore lining. Soil at test pit WC-2 was a brown sandy loam (10 YR 4/2) with redox concentrations (10 YR 3/4) in the matrix. The soil at WC-3 was a clay loam (10 YR 3/2) with redox concentrations (10 YR 5/1) in the matrix. The profile at WC-5 exhibited a dark brown clay loam (10 YR 2/1) with redox concentrations (10 YR 4/6) in the matrix. The low chroma colors and redox features were positive indicators of hydric soil.

Data point WC-4 exhibited hydric soil indicators consisting of a low chroma (10 YR 3/1) and redox features (10 YR 4/1). The data point was located within an upland.

3.4. Wetland Delineation

The wetland boundaries delineated in 2010 are illustrated on Figure 3 (Appendix A). The wetland data forms are included in Appendix B. Table 6 summarizes wetland acreages delineated in 2004 (baseline), 2007, 2008, and 2010. The total area of aquatic habitat delineated in 2010, which includes wetlands and open water, was 67.70 acres. Open water areas occurred in the creek and as small, irregular depressions that encompassed 2.56 acres or 3.8 percent of the total wetland acreage. The aquatic habitat acreage increased from 61.75 in 2008 to 67.7 in 2010, with the majority of the gain within the west portion of the site.

Table 6. Summary of open water and wetland acreages delineated at the Woodson Creek Wetland Mitigation Site in 2004, 2007, 2008, and 2010.

Year	Open Water/ Aquatic Bed (Acre)	Wetland (Acre)	Total Aquatic Habitat (Acre)
2004 (pre-mitigation)	0.00	57.48	57.48
2007	2.55	61.86	64.42
2008	2.73	59.02	61.75
2010	2.56	65.14	67.70

3.5. Wildlife

A comprehensive list of fish and wildlife species observed directly and indirectly on the site from 2007 to 2010 is presented in Table 7 (Monitoring Form, Appendix B). Five bird species were identified in 2010. Deer mouse, pronghorn antelope, red fox, and white-tail deer were observed directly during 2010 monitoring and tracks of American mink and coyote were noted.

Table 7. Wildlife species observed at the Woodson Creek Wetland Mitigation Site in 2007, 2008, and 2010.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIAN	
Columbia Spotted Frog	*Rana luteiventris*
Western Toad	*Bufo boreas*
BIRD	
American Avocet	*Recurvirostra americana*
American Kestrel	*Falco sparverius*
American White Pelican	*Pelecanus erythrorhynchos*
American Wigeon	*Anas americana*
Bald Eagle	*Haliaeetus leucocephalus*
Barn Swallow	*Hirundo rustica*
Blue-winged Teal	*Anas discors*
Canada Goose	*Branta canadensis*
Cinnamon Teal	*Anas cyanoptera*
Cliff Swallow	*Petrochelidon pyrrhonota*
Double-crested Cormorant	*Phalacrocorax auritus*
Eastern Kingbird	*Tyrannus tyrannus*
Gadwall	*Anas strepera*
Golden Eagle	*Aquila chrysaetos*
Great Blue Heron	*Ardea herodias*
Great Horned Owl	*Bubo virginianus*
Green-winged Teal	*Anas crecca*
Killdeer	*Charadrius vociferus*
Lesser Scaup	*Aythya affinis*
Long-billed Curlew	*Numenius americanus*
Mallard	*Anas platyrhynchos*
Northern Harrier	*Circus cyaneus*
Northern Pintail	*Anas acuta*
Northern Shoveler	*Anas clypeata*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Ring-necked Pheasant	*Phasianus colchicus*

Table 7 (Continued). Wildlife species observed at the Woodson Creek Wetland Mitigation Site in 2007, 2008, and 2010.

COMMON NAME	SCIENTIFIC NAME
BIRD	
Rock Pigeon	*Columba livia*
Sandhill Crane	*Grus canadensis*
Savannah Sparrow	*Passerculus sandwichensis*
Sora	*Porzana carolina*
Swainson's Hawk	*Buteo swainsoni*
Tundra Swan	*Cygnus columbianus*
Willet	*Tringa semipalmata*
Wilson's Phalarope	*Phalaropus tricolor*
Wilson's Snipe	*Gallinago delicata*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
MAMMAL	
American Mink	***Mustela vison***
Black-tailed Jack Rabbit	*Lepus californicus*
Bobcat	*Lynx rufus*
Coyote	*Canis latrans*
Deer Mouse	*Peromyscus maniculatus*
Dusky or Montane Shrew	*Sorex monticolus*
Meadow Vole	*Microtus pennsylvanicus*
Moose	*Alces americanus*
Mule Deer	*Odocoileus hemionus*
Porcupine	*Erethizon dorsatum*
Pronghorn	***Antilocapra americana***
Raccoon	*Procyon lotor*
Red Fox	*Vulpes vulpes*
Striped Skunk	*Mephitis mephitis*
White-tailed Deer	*Odocoileus virginianus*
REPTILE	
Common Gartersnake	*Thamnophis sirtalis*
FISH	
Brook Trout	*Salvelinus fontinalis*

Species first identified in 2010 are listed in **bold** type.

3.6. Functional Assessment

Functional assessment forms were completed for the project wetlands in 2010 using the 1999 MDT MWAM (Berglund 1999) Appendix B). The baseline assessment was completed in 2005. Functional assessment results for 2005, 2008, and 2010 are summarized in Table 8. The mitigation site was separated into three AAs, Woodson Creek Floodplain, Woodson Creek West, and Woodson Creek East.

The 2010 functional assessments rated the restored Woodson Creek floodplain (29.17 acres) and the re-established east parcel (31.23 acres) as Category II wetlands. The rehabilitated west parcel (7.3 acres) was rated as a Category III wetland. The restored Woodson Creek floodplain received 71 percent of the possible points and high ratings for the Montana Natural Heritage Program (MTNHP) sensitive species habitat, general wildlife habitat, short and long term surface water storage, sediment/nutrient/ toxicant removal, streambank/shoreline stabilization, and production export/food chain support. The East parcel was rated with 66 percent of the total possible and high ratings for the MTNHP sensitive species habitat, short and long term surface water storage, sediment/nutrient/toxicant removal, and production export/food chain support. The West parcel received 51 percent of the total possible points and high ratings for sediment/nutrient/toxicant removal and groundwater discharge/recharge.

Functional points and percentages for each AA increased slightly between 2008 and 2010. The Woodson Creek Floodplain AA showed an increase in Recreation/Education Potential due to the classification of the site a moderately disturbed. The recognition of the East Parcel as potentially receiving overflow from Sixteen Mile Creek, shoreline stabilization from the abundant vegetation cover around the open water, and decrease in disturbance resulted in an increase of three percentage points for this AA. Improvements in the West Parcel AA was a result of the increase in estimated maximum acre feet of water contained in wetland subject to periodic flooding or ponding and a decrease of disturbance at site. There was a net wetland acreage gain of 5.95 acres and a functional unit gain of 375 between 2008 and 2010 for all AA's at the Woodson mitigation site.

Table 8. Summary of 2005, 2007, 2008, and 2010 wetland function/value ratings and functional points at the Woodson Creek Wetland Mitigation Site.

Function and Value Parameters from the 1999 MDT Montana Wetland Assessment Method[1]	2005 Baseline		2008			2010		
	Woodson Floodplain	East & West Parcel	Woodson Creek Floodplain	East Parcel	West Parcel	Woodson Creek Floodplain	East Parcel	West Parcel
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MNHP Species Habitat	Low (0.1)	Low (0.1)	High (1.0)	High (1.0)	Mod (0.6)	High (1.0)	High (1.0)	Mod (0.6)
General Wildlife Habitat	Low (0.3)	Low (0.3)	High (0.9)	Mod (0.7)	Mod (0.7)	High (0.9)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	Low (0.3)	NA	Mod (0.6)	NA	NA	Mod (0.6)	NA	NA
Flood Attenuation	Low (0.1)	NA	Mod (0.6)	NA	NA	Mod (0.6)	Mod (0.4)	NA
Short and Long Term Surface Water Storage	Low (0.3)	NA	High (1.0)	High (0.8)	Low (0.3)	High (1.0)	High (0.8)	Low (0.6)
Sediment/Nutrient/Toxicant Removal	Mod (0.6)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Mod (0.7)	NA	High (1.0)	NA	NA	High (1.0)	High (1.0)	NA
Production Export/Food Chain Support	Mod (0.4)	Mod (0.7)	High (0.9)	High (0.9)	Mod (0.6)	High (0.9)	High (0.9)	Mod (0.6)
Groundwater Discharge/Recharge	High (1.0)	Low (0.1)	Mod (1.0)	Mod (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.3)	Low (0.2)	Low (0.2)	Low (0.3)
Recreation/Education Potential	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.3)	Low (0.3)	Low (0.7)
Actual Points / Possible Points	4.1/12	2.2 / 8	8.3/12	5.7 / 9	4.6 / 9	8.5 / 12	7.3 / 11	5.5 / 9
% of Possible Score Achieved	34.0	27.5	69	63	51	71	66	51
Overall Category	III	IV	II	II	III	II	II	III
Total Acreage of Assessed Aquatic Habitat within AA Boundaries	48	57.00	**28.08**	**27.77**	**5.90**	**29.17**	**31.23**	**7.30**
Functional Unit (acreage x actual points)	16.40	124.70	**233.06**	**158.29**	**27.14**	**247.95**	**227.98**	**40.15**
Net Acreage Gain (from baseline conditions)	NA	NA	**4.27**			**5.95**		
Net Functional Unit Gain (from baseline conditions)	NA	NA	**277**			**375**		

3.7. Channel Cross-Sections

Locations of the channel cross-sections are shown on Figure 2 (Appendix A). The 2007, 2008, and 2010 cross-sectional data are illustrated on Charts 7 through 10. Slight increases in channel depth and width were observed at both locations in 2007 (PBS&J 2008). The cause was unclear and assumed to be the result of minor adjustments in the channel geometry and settling of the banks (PBS&J 2008). The channel conveyed substantially more water in 2008 than that observed in 2007. The estimated 2008 discharges at Cross-section 1 (XS-1) and Cross-section 2 (XS-2) were 7.4 cubic feet per second (cfs) and 11 cfs, respectively. The flow increase at cross-section 2 was attributed to return flows from upstream flooding and groundwater entering the site from leakage of the Sixteen Mile irrigation ditch located upgradient from cross-section 2 (PBS&J 2008).

The channel geometry measured at XS-1 in 2010 reflected steady conditions from the 2008 survey. The width of the thalweg appeared to have increased slightly between 2008 and 2010, with channel depth and bankfull width remaining fixed. Similar conditions were observed at XS-2. Depth and bankfull width adjustments appeared minimal. Both banks at these cross-sections were well vegetated by species with high soil stability ratings, which appeared to contribute to the overall stability of the stream morphology.

3.8. Streambank Erosion Pins

Streambank erosion pins were installed at upstream and downstream locations along outside meanders in the newly constructed channel (Figure 2, Appendix A). The pins were installed after the majority of runoff had occurred. The downstream location was chosen specifically based on the presence of severe bank erosion (PBS&J 2008). Bank erosion was observed at both locations in 2008 and included an average erosion rate of 0.29 feet per year at the upper pin and 0.14 feet per year at the lower pin. Minimal erosion was noted in 2010 at the lower pin, measuring 0.10 feet since 2008. An increased level of erosion was observed at the upstream pin with 0.50 feet of erosion since 2008. However, overall bank stability and the presence of rooted plant species with high soil stability ratings appear adequate to limit erosion to normal channel adjustments.

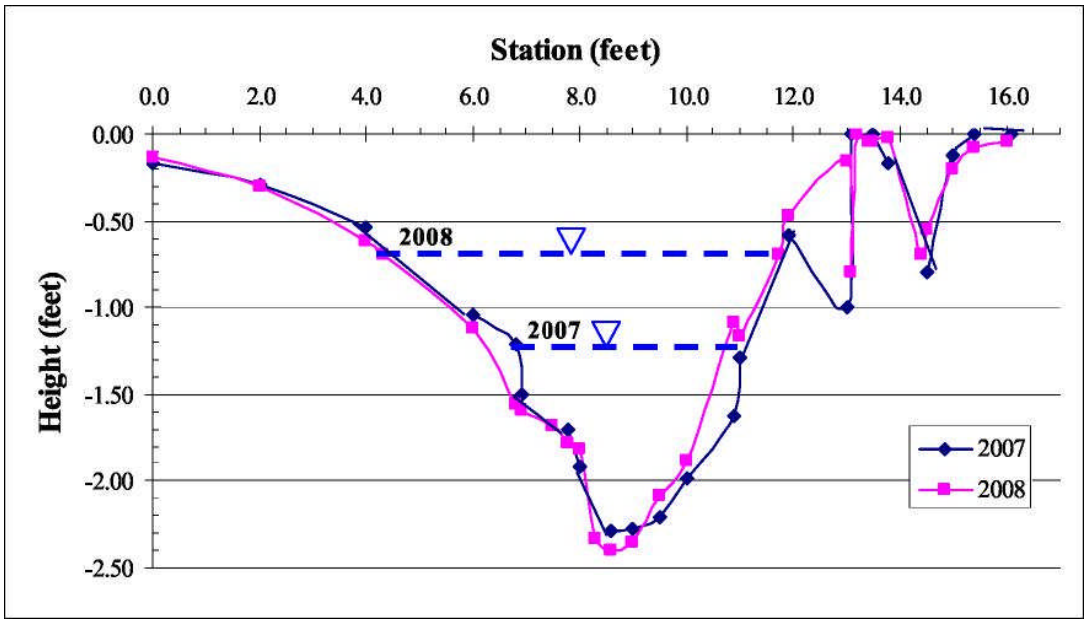

Chart 7. Cross-sectional data at XS-1 from 2007 and 2008.

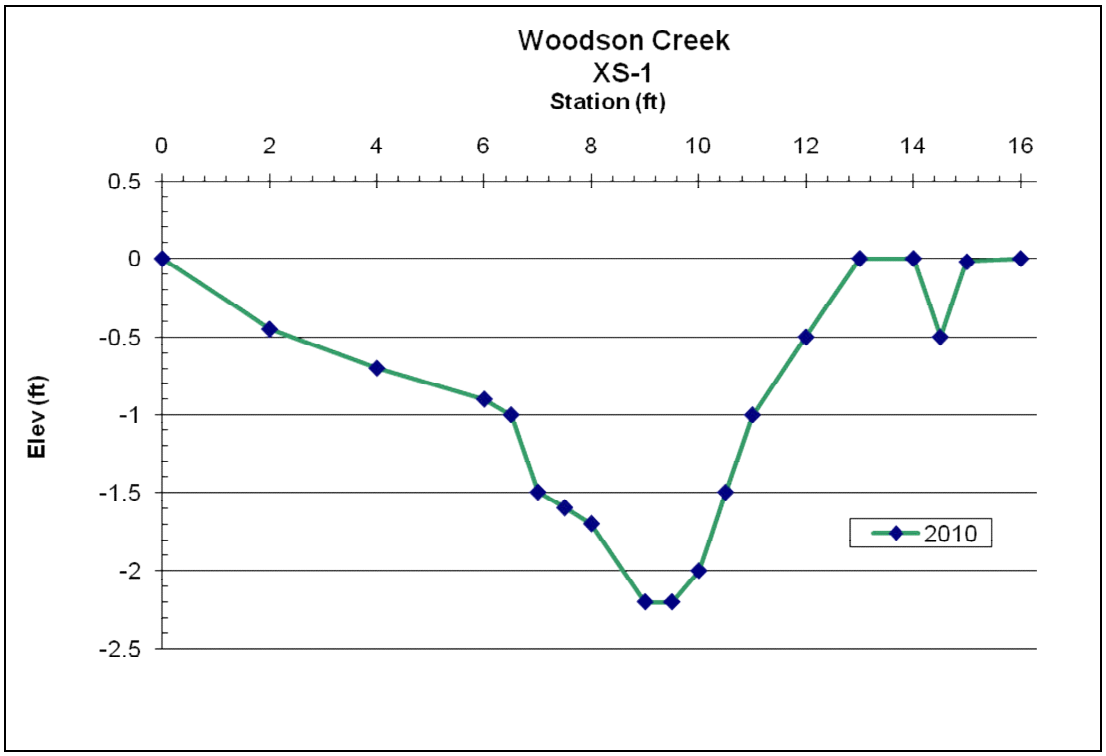

Chart 8. Cross-sectional data at XS-1 for 2010.

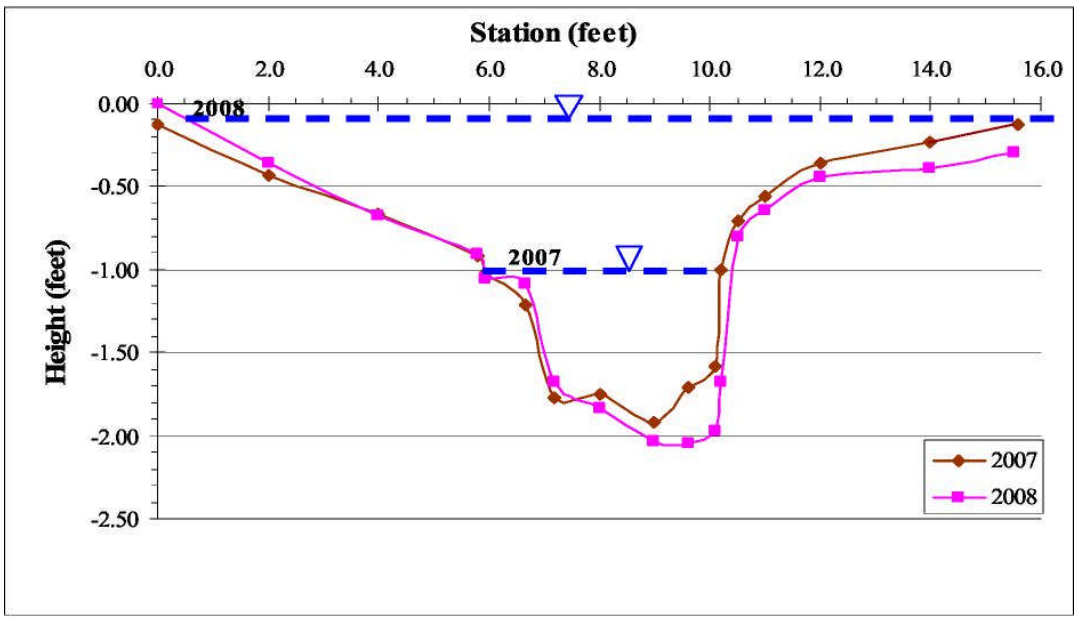

Chart 9. Cross-sectional data at XS-2 from 2007 and 2008.

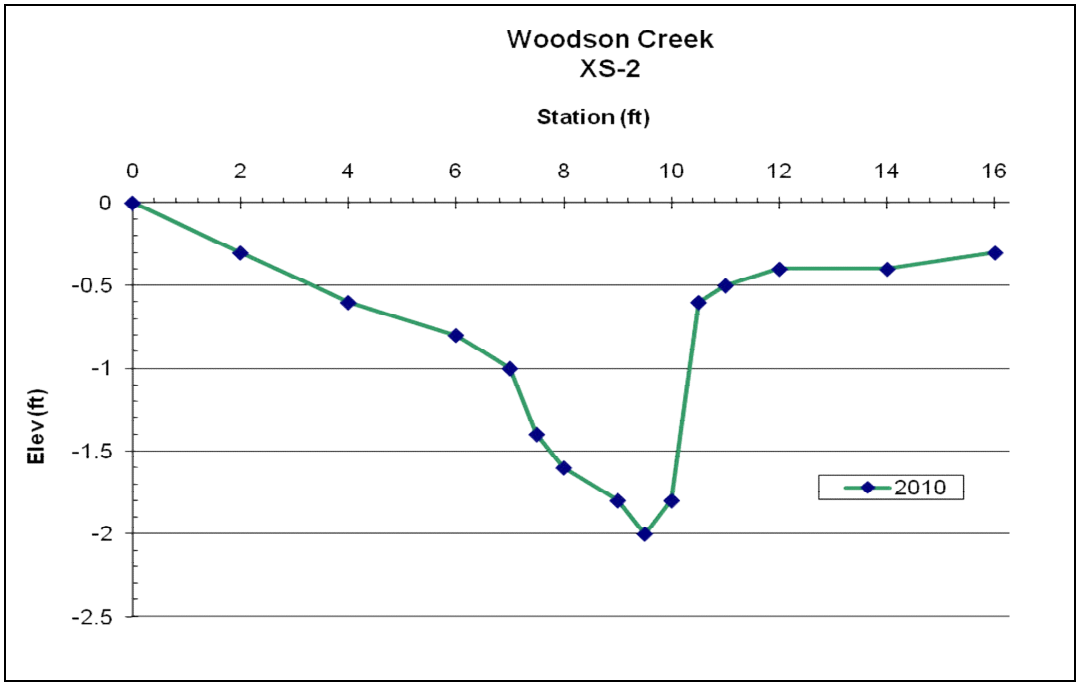

Chart 10. Cross-sectional data at XS-2 for 2010.

3.9. Photo Documentation

Representative photographs were taken from established photo points and transect ends (Appendix C). Photo points 1 through 4 from 2008 and 2010 are shown on pages C-1 to C-5. Photos of the transect end points taken in 2008 and 2010 are presented on pages C-5 and C-6 of Appendix C. The stream erosion points are shown on page C-7 of Appendix C.

3.10. Maintenance Needs

Creeping foxtail continued to dominate a majority of the site. The cover of the pre-existing creeping foxtail was to be eliminated as part of the mitigation agreement. Eradication measures using herbicides began in June 2008. Methods to control this species should continue.

Four infestations of Canada thistle were mapped within the site boundaries in 2010 (Figure 3, Appendix A). The infestations were less than 0.1 acre in size and contributed between one and five percent to vegetation cover in these identified locations. Weed management should continue to prevent the spread of Canada thistle into other areas.

3.11. Current Credit Summary

The Woodson Creek Mitigation Site originally encompassed seven different credit zones. The performance standards were amended by the USACE in 2010 as summarized in the Introduction in Section 1.0 (USACE 2010b). The 2010 credit summary used the AA acreages and assumed a 1:1 credit ratio for wetlands that received a Category II rating and a 1.5:1 credit ratio for wetlands that received a Category III rating (Table 9). Full credit will ultimately be given to portions of assessment areas that meet all of the performance standards at the credit ratios listed in Table 9 (USACE 2010a). The MDT will continue to monitor this site. The MDT will continue to monitor the site and coordinate with the USACE on adaptive management issues concerning credit release for this site.

Table 9. Credit summary for the Woodson Creek Wetland Mitigation Site.

Credit Zone	Credit Category	Credit Ratio	2010 Acres	2010 Credit Acres Estimate
Woodson Creek Floodplain	Restoration(Re-establishment)	1:1	29.17	29.17
East Parcel	Re-establishment	1:1	31.23	31.23
West Parcel	Rehabilitation	1.5:1	7.3	4.87
Total				**65.27**

4. REFERENCES

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Post, Buckley, Schuh, and Jernigan (PBS&J). 2008. Montana Department of Transportation Wetland Mitigation 2008 Monitoring Report: Woodson Creek 2008. December. Prepared for Montana Department of Transportation, Helena, Montana.

Reed, P.B. 1988. *National list of plant species that occur in wetlands: North West (Region 9)*. Biological Report 88(26.9), May 1988. U.S. Fish and Wildlife Service, Washington, DC.

USACE 2010a. March 30, 2010, letter from Todd TIllenger of the USACE, Helena Regulatory Office, to Tom Coleman of Oasis Environmental, Inc.

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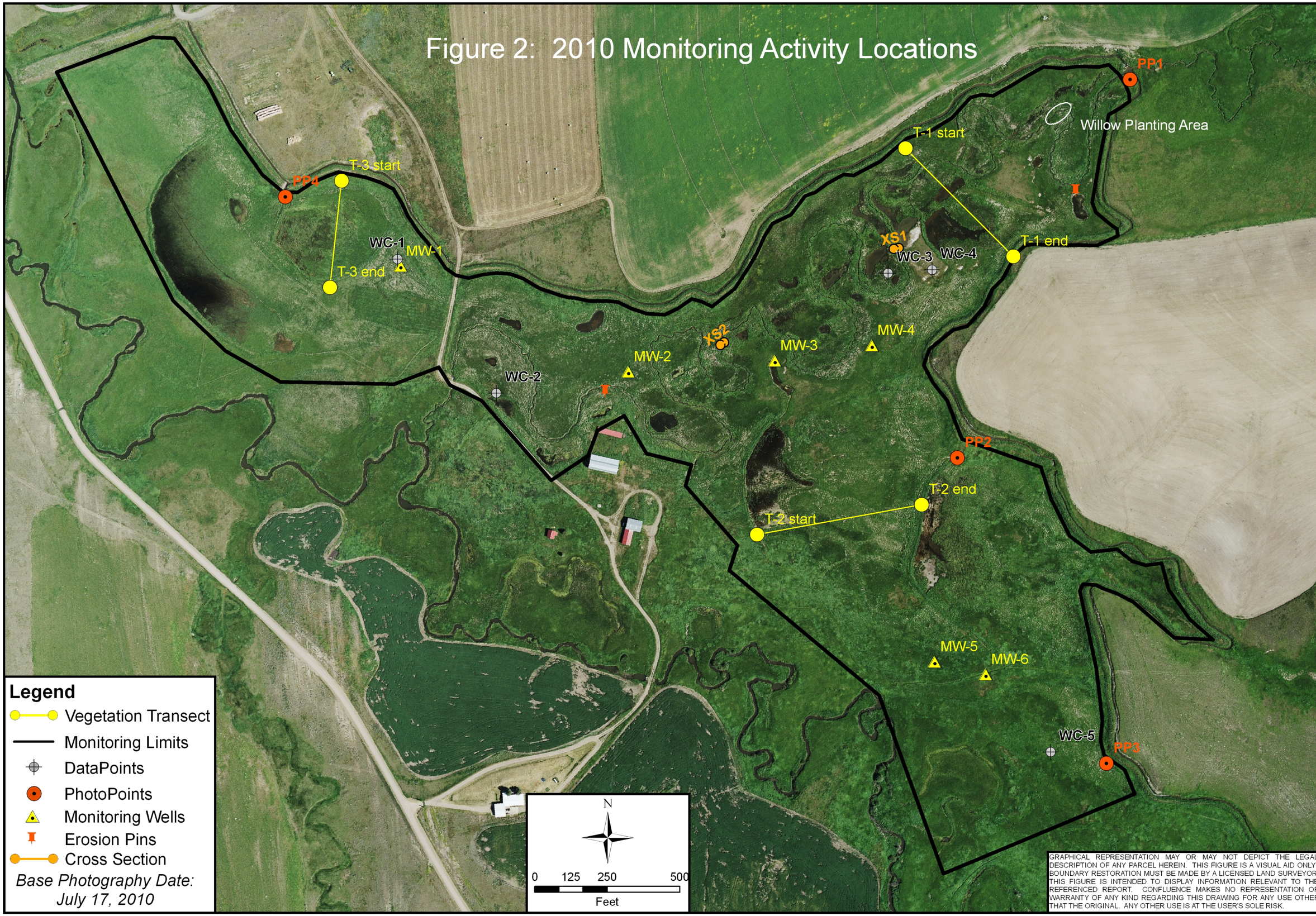
WRCC (Western Regional Climate Center). 2010. Precipitation data accessed September 2010 from http://www.wrcc.dri.edu/CLIMATEDATA.html..

Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring
Woodson Creek
Meagher County, Montana

Figure 2: 2010 Monitoring Activity Locations



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

LOCATION: Meagher Co., MT

PROJECT NO: MDT.004

FILE: Woodson/Monitor2010.mxd

Project Name
Woodson Creek Mitigation Site

Drawing Title
2010 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	JL

SCALE: Noted

Drawn: October 28, 2010

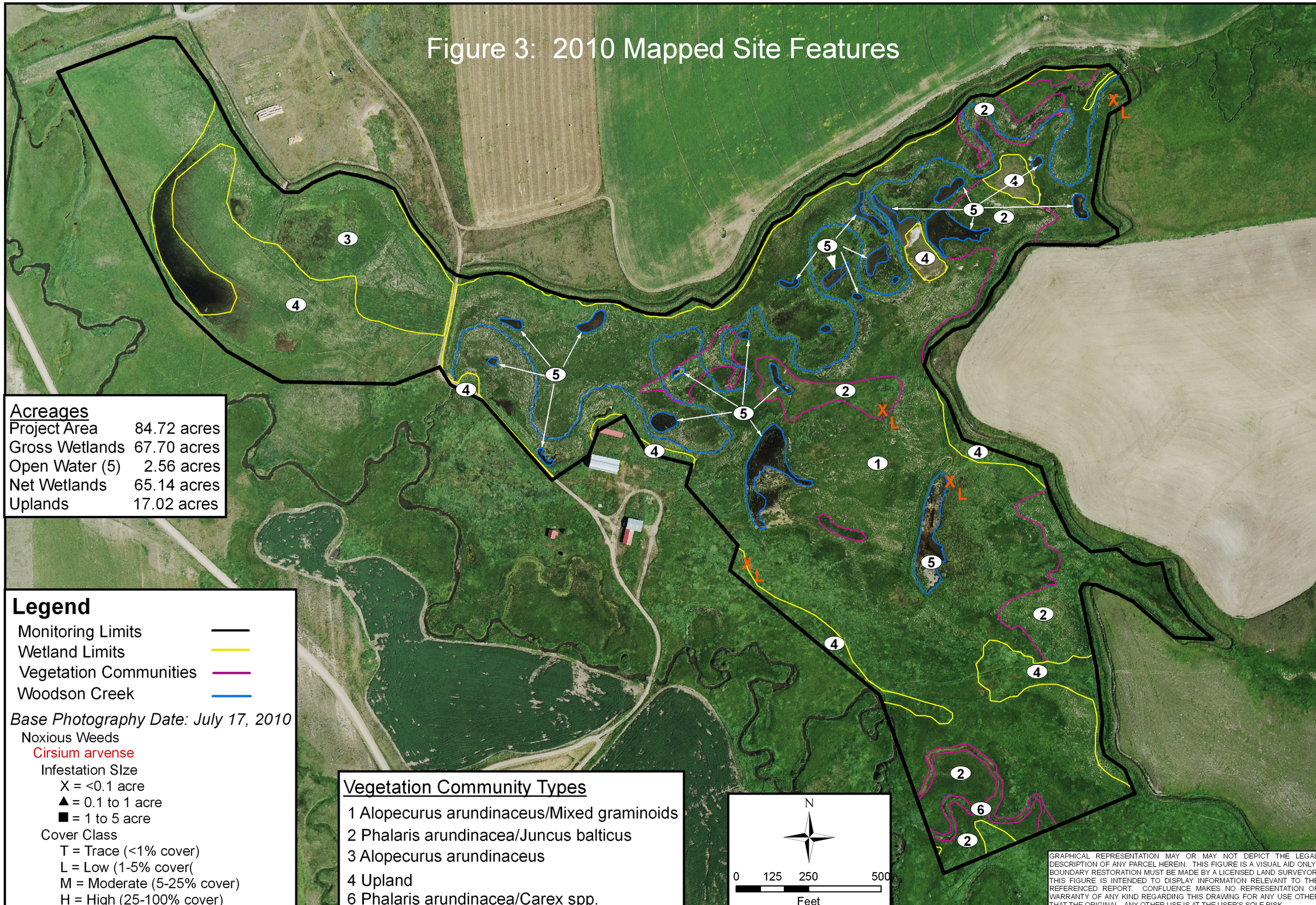
PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 2

REV -

Figure 3: 2010 Mapped Site Features



LOCATION: Meagher Co., MT
PROJECT NO: MDT.004
FILE: Woodson/Veg2010.mxd

Project Name
Woodson Creek Mitigation Site

Drawing Title
2010 Mapped Site Features

DRAWN BCS | CHECKED BV | APPROVED JL
SCALE: Noted
Drawn: October 28, 2010
PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

REV -

Appendix B

2010 Wetland Mitigation Site Monitoring Form
2010 USACE Wetland Delineation Form
2010 MDT Functional Assessment Form

MDT Wetland Mitigation Monitoring
Woodson Creek
Meagher County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Woodson Creek Assessment Date/Time 7/20/2010

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

Weather: Warm & sunny Location: Ringling, MT

MDT District: Butte Milepost: 0

Legal Description: T 6N R 8E Section(s) 6 & 9

Initial Evaluation Date: 7/18/2007 Monitoring Year: 3 #Visits in Year: 1

Size of Evaluation Area: 85 (acres)

Land use surrounding wetland:

Agriculture, outbuildings of a farmstead

HYDROLOGY

Surface Water Source: Woodson Creek

Inundation: ☑ Average Depth: 0.2 **(ft)** Range of Depths: 0-3 **(ft)**

Percent of assessment area under inundation: 30 %

Depth at emergent vegetation-open water boundary: 1 **(ft)**

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

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

Groundwater Monitoring Wells

Record depth of water surface below ground

Well ID	Water Surface Depth
MW-1	0 **(ft)**
MW-2	0.52 **(ft)**
MW-3	0.45 **(ft)**
MW-4	0.32 **(ft)**
MW-5	0.71 **(ft)**
MW-6	2.1 **(ft)**

Additional Activities Checklist:

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

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

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

Hydrology Notes:

VEGETATION COMMUNITIES

Site Woodson Creek

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

* Indicates accepted spp name not on '88 list.

Community # 1 Community Type: Alopecurus arundinaceus / Mixed graminoids

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Carex lasiocarpa	1
Carex praegracilis	1	Deschampsia cespitosa	1
Dodecatheon pulchellum	1	Juncus balticus	1
Poa compressa	1	Potentilla anserina	1
Scirpus microcarpus	1	Trifolium pratense	1

Comments:

Community # 2 Community Type: Phalaris arundinacea / Juncus balticus

Species	Cover class	Species	Cover class
Cirsium arvense	1	Equisetum hyemale	1
Iris missouriensis	1	Juncus balticus	3
Penstemon laricifolius	1	Phalaris arundinacea	5
Poa palustris	1	Potentilla anserina	1
Potentilla fruticosa	1	Solidago spp.	1

Comments:

Community # 3 Community Type: Alopecurus arundinaceus /

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Eleocharis palustris	0
Triglochin maritimum	0		

Comments:

Community # 4 Community Type: Upland /

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis stolonifera	3
Alopecurus arundinaceus	3	Bromus inermis	3
Cynoglossum officinale	0	Melilotus officinalis	0
Vicia sativa	0		

Comments:

Community # 5 Community Type: Open Water / Aquatic Bed

Species	Cover class	Species	Cover class
Carex aquatilis	0	Carex lanuginosa	0
Carex nebrascensis	0	Carex utriculata*	0
Eleocharis palustris	0	Juncus balticus	0
Juncus effusus	0	Mentha arvensis	0
Open Water	5	Ranunculus gmelinii	0

Comments:

Listed veg species associated with margins at edge of open water

Community # 6 Community Type: Phalaris arundinacea / Carex spp.

Species	Cover class	Species	Cover class
Carex aquatilis	0	Carex utriculata*	4
Eleocharis palustris	1	Phalaris arundinacea	5
Triglochin maritimum	1		

Comments:

VEGETATION TRANSECTS

Site: Woodson Creek **Date:** 7/20/2010

Transect Number: 1 **Compass Direction from Start:** 135

Interval Data:

Ending Station 121 **Community Type:** Phalaris arundinacea / Juncus balticus

Species	Cover class	Species	Cover class
Agrostis alba	2	Alopecurus arundinaceus	5
Carex lasiocarpa	0	Carex praegracilis	0
Cicuta douglasii	0	Cirsium arvense	0
Deschampsia cespitosa	0	Dodecatheon pulchellum	0
Eleocharis palustris	1	Juncus balticus	2
Phalaris arundinacea	3	Potentilla anserina	0
Sonchus arvensis	0	Taraxacum officinale	0
Trifolium longipes	0	Trifolium repens	0
Triglochin maritimum	0		

Ending Station 135 **Community Type:** Open Water / Aquatic Bed

Species	Cover class	Species	Cover class
Aquatic Macrophytes	2	Open Water	5

Ending Station 275 **Community Type:** Alopecurus arundinaceus / Mixed graminoids

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Carex lasiocarpa	0
Carex praegracilis	0	Eleocharis palustris	1
Juncus balticus	0	Scirpus microcarpus	1

Ending Station 307 **Community Type:** Phalaris arundinacea / Juncus balticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	4	Carex lasiocarpa	1
Carex praegracilis	0	Cicuta douglasii	0
Dodecatheon pulchellum	0	Juncus balticus	4
Phalaris arundinacea	3	Poa palustris	0
Potentilla anserina	0	Taraxacum officinale	0
Trifolium longipes	1	Trifolium repens	0
Triglochin maritimum	1		

Ending Station 347 **Community Type:** Open Water / Aquatic Bed

Species	Cover class	Species	Cover class
Aquatic Macrophytes	3	Open Water	5

Ending Station 442 **Community Type:** Alopecurus arundinaceus / Mixed graminoids

Species	Cover class	Species	Cover class
Agrostis stolonifera	2	Alopecurus arundinaceus	5
Carex nebrascensis	0	Carex praegracilis	0
Deschampsia cespitosa	0	Dodecatheon pulchellum	0
Eleocharis palustris	0	Juncus balticus	2
Potentilla anserina	1	Sonchus arvensis	0
Triglochin maritimum	0		

Ending Station 450 **Community Type:** Open Water / Aquatic Bed

Species	Cover class	Species	Cover class
Aquatic Macrophytes	1	Open Water	5

Ending Station 526 **Community Type:** Alopecurus arundinaceus / Mixed graminoids

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Alopecurus arundinaceus	4
Carex praegracilis	2	Deschampsia cespitosa	2
Dodecatheon pulchellum	1	Juncus balticus	4
Triglochin maritimum	0		

Transect Notes:

Transect Number: 2 **Compass Direction from Start:** 75

Interval Data:

Ending Station 235 **Community Type:** Alopecurus arundinaceus / Mixed graminoids

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	3	Bare Ground	3
Beckmannia syzigachne	0	Carex utriculata*	1
Cicuta douglasii	0	Eleocharis palustris	1
Polygonum amphibium	0	Rumex crispus	0
Triglochin maritimum	0		

Ending Station 255 **Community Type:** Phalaris arundinacea / Juncus balticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Carex praegracilis	0
Carex utriculata*	1	Dodecatheon pulchellum	0
Juncus balticus	3	Phalaris arundinacea	3
Potentilla anserina	0	Trifolium longipes	0
Triglochin maritimum	0		

Ending Station 583 **Community Type:** Alopecurus arundinaceus / Mixed graminoids

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Carex praegracilis	1
Dodecatheon pulchellum	0	Eleocharis palustris	0
Juncus balticus	2	Potentilla anserina	1
Taraxacum officinale	0	Trifolium longipes	0

Transect Notes:

Transect Number: 3 **Compass Direction from Start:** 187

Interval Data:

Ending Station 353 **Community Type:** Alopecurus arundinaceus /

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Eleocharis palustris	1
Hordeum jubatum	1	Triglochin maritimum	0

Transect Notes:

Veg transect located in Alopecurus arundinaceus monoculture, standing water throughout majority of transect.

PLANTED WOODY VEGETATION SURVIVAL

Woodson Creek

Planting Type	#Planted	#Alive	Notes
Salix sp	44	10	surviving, not thriving
Salix sp	25	12	Green stems with leaves

Comments

Woodson Creek

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
Eastern Kingbird	1		OW
Northern Harrier	1	FO	
Red-winged Blackbird	3	L	MA, WM
Sandhill Crane	2		WM
Wilson's Snipe	2		AB

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
American Mink		Yes	No	No	
Coyote		Yes	No	No	
Deer Mouse	1	No	No	Yes	
Pronghorn	7	No	No	No	
Red Fox	1	No	No	No	
White-tailed Deer	3	No	No	No	

Wildlife Comments:

Woodson Creek

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
5198			174	T-3, start
5198			95	PP3
5199			353	T-3, end
5199			132	PP3
5200			173	PP3
5202			224	PP3
5203			288	PP3
5218				Bank erosion pin 2
5226			314	T-1, start
5227			134	T-1, end
5238				Bank erosion pin 1
5242			208	PP1
5243			226	PP1
5244			249	PP1
5256			197	PP2
5258			230	PP2
5260			266	PP2
5262			203	PP4
5263			225	PP4
5265			262	PP4
5266			296	PP4
5268			324	PP4
5274			74	T-2, start
5275			254	T-2, end

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? No

If yes, do they need to be repaired? No

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? Yes

If yes, are the structures working properly and in good working order? No

If no, describe the problems below.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Woodson Creek City/County: Meagher Sampling Date: 7/14/2010

Applicant/Owner: MDT State: MT Sampling Point: WC-1

Investigator(s): E. Nyquist/B. Sandefur Section, Township, Range: S 9 T 6 R 8

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

Subregion (LRR): LRR E Lat: Long: Datum:

Soil Map Unit Name: Soapcreek-Fairway Complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Alopecurus arundinaceus	100	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.		☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Monoculture

SOIL

Sampling Point: WC-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	95	10YR 3/4	5	C	PL	Silty Clay Loam	fine roots
12-22	10YR 4/1	95	4/4	5	C	PL	Clay Loam	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: frigid Fluvaquentic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☑	No ☐	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes ☑	No ☐	Depth (inches): 0

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Headgate open with flood irrigation

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Woodson Creek City/County: Meagher Sampling Date: 7/14/2010

Applicant/Owner: MDT State: MT Sampling Point: WC-2

Investigator(s): E. Nyquist/B. Sandefur Section, Township, Range: S 9 T 6 R 8

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

Subregion (LRR): LRR E Lat: Long: Datum:

Soil Map Unit Name: Soapcreek-Fairway Complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size:)			
1. Alopecurus arundinaceus	50	☑	FACW
2. Salix exigua	2	☐	OBL
3. Juncus balticus	10	☐	FACW+
4. Deschampsia cespitosa	5	☐	UPL
5. Eleocharis palustris	10	☐	OBL
6. Carex lasiocarpa	5	☐	OBL
7. Carex praegracilis	5	☐	FACW
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.		☐	
	87 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? **Yes** ☑ **No** ☐

Remarks:

SOIL

Sampling Point: WC-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	95	10YR 4/3	3	C	PL	Sandy Loam	
8-16	10YR 4/2	90	10YR 3/4		C	M	Sandy Loam	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: frigid Fluvaquentic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☑	No ☐	Depth (inches): 10
Saturation Present? (includes capillary fringe)	Yes ☑	No ☐	Depth (inches): 2

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Woodson Creek City/County: Meagher Sampling Date: 7/14/2010

Applicant/Owner: MDT State: MT Sampling Point: WC-3

Investigator(s): E. Nyquist/B. Sandefur Section, Township, Range: S 9 T 6 R 8

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

Subregion (LRR): LRR E Lat: Long: Datum:

Soil Map Unit Name: Soapcreek-Fairway Complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size:)			
1. Trifolium arvense	3	☐	UPL
2. Juncus balticus	5	☑	FACW+
3. Potentilla anserina	5	☑	OBL
4. Equisetum hyemale	5	☑	FACW
5. Poa palustris	20	☑	FAC
6. Lactuca serriola	5	☑	FACU
7. Sisyrinchium montanum	3	☐	UPL
8. Bromus inermis	15	☑	UPL
9. Taraxacum officinale	5	☑	FACU
10. Phleum pratense	3	☐	FAC-
11.		☐	
	69 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57.14 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? **Yes** ☑ **No** ☐

Remarks:

SOIL

Sampling Point: WC-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Clay Loam	
6-12	10YR 3/2	90	10YR 5/1		C	M	Clay Loam	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: frigid Fluvaquentic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☑	No ☐	Depth (inches): 10
Saturation Present? (includes capillary fringe)	Yes ☑	No ☐	Depth (inches): 6

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Woodson Creek City/County: Meagher Sampling Date: 7/14/2010

Applicant/Owner: MDT State: MT Sampling Point: WC-4

Investigator(s): E. Nyquist/B. Sandefur Section, Township, Range: S 9 T 6 R 8

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

Subregion (LRR): LRR E Lat: Long: Datum:

Soil Map Unit Name: Soapcreek-Fairway Complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size:)			
1. Grindelia squarrosa	5	☐	FACU
2. Agrostis stolonifera	80	☑	FAC
3. Lactuca serriola	10	☐	FACU
4. Melilotus officinalis	5	☐	FACU
5. Hordeum jubatum	10	☐	FAC
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.		☐	
	110 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: WC-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	100					Clay Loam	
12-20	10YR 3/1	95	10YR 4/1	5	D	M		

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: frigid Fluvaquentic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: no hydro indicators

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Woodson Creek City/County: Meagher Sampling Date: 7/14/2010

Applicant/Owner: MDT State: MT Sampling Point: WC-5

Investigator(s): E. Nyquist/B. Sandefur Section, Township, Range: S 9 T 6 R 8

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

Subregion (LRR): LRR E Lat: Long: Datum:

Soil Map Unit Name: Soapcreek-Fairway Complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris arundinacea	100	☑	FACW
2. Juncus balticus	5	☐	FACW+
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.		☐	
	105 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.		☐	
2.		☐	
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: WC-5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2						Clay Loam	
6-16	10YR 2/1	95	10YR 4/6	5	C	M	Clay Loam	
16-22	10YR 4/1	95	10YR 2/1	5	D	M		

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: frigid Fluvaquentic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 12

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project name Woodson Creek **2. MDT project#** **Control#**

3. Evaluation Date 7/20/2010 **4. Evaluators** B. Sandefur, E. Nyquist **5. Wetland/Site# (s)** AA-1 - Woodson Creek

6. Wetland Location(s): T 6S **R** 8E **Sec1** 9 **T** **R** **Sec2** 16

Approx Stationing or Mileposts

Watershed Missouri/Sun/Smith-7 **County** Meagher

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 29.17

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 29.17

How assessed: Measured e.g. by GPS

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Palustrine		Aquatic Bed	Excavated	semi-permanently flooded	5
Riverine	Palustrine		Emergent Wetland		seasonally flooded	20
Riverine	Riverine		Unconsolidated Bottom	Excavated	Permanently flooded	5
Slope	Palustrine		Emergent Wetland		seasonally flooded	70

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Abundant

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

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

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

Adjacent parcels farmed and grazed.

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

Cirsium arvense

iii. Brief descriptive summary of surrounding land use/habitat

AA is the floodplain of Woodson Creek which consists of a wetland meadow primarily dominated by Garrison creeping foxtail. Surrounding landuse is predominantly agriculture (wheat production, hay production, and livestock). Hydrology sources are Woodson Creek and Sixteen Mile Irrigation Ditch.

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

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments:

SECTION PERTAINING TO FUNCTION _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 (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ○ **D** ○ **S**

Secondary habitat (list Species) ○ **D** ○ **S**

Incidental habitat (list species) ○ **D** ○ **S**

No usable habitat ◉ **S**

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
Functional Points and Rating	1H	.9H	.8H	.7M	.5L	.3L	0L

Sources for documented use USFWS - no habitat for sage grouse or plover

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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 (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ◉ **D** ○ **S** Sandhill crane

Secondary habitat (list Species) ○ **D** ○ **S**

Incidental habitat (list species) ○ **D** ◉ **S** Bald eagle

No usable habitat ○ **S**

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for the function)

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MNHP, observations of species during monitoring.

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Substantial

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

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

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

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

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

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

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

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

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

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

Comments

14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., click ☐ **(NA)** here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], the Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Permanent/ Perennial			Seasonal/ Intermittent			Temporary/ Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading – 50 to 75% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - <50% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E=H, H=M, M=L, L=L]). *Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support?* Y ◯ N ◉ Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E=exceptional, H=high, M=moderate, L=low] for this function)

Types of fish known or suspected within AA	*Modified Habitat Quality (ii)*			
	Exceptional	High	Moderate	Low
Native game fish	1E	.9H	.7M	5M
Introduced game fish	.9H	.8H	..6M	.4M
Non-game fish	.7M	.6M	.5M	.3L
No fish	.5M	.3L	.2L	.1L

Comments The restored portion of Woodson Creek has displayed an increase in aquatic cover and variety in aquatic habitat, includi

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

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

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

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

Comments: Culverts located downstream

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

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

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

Comments:

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = Structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P=permanent/perennial; S/I=seasonal/intermittent; T/E/A=temporary/ephemeral or absent [see instructions for further definitions of these terms].)

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

Comments:

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

iii. Rating: Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H=high, L=low] for this function.

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments:

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: i. Is the AA a known rec./ed. Site ◯ Y ◉ **N** (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

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

ii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** ◯ Y ◉ **N** (If yes, i to ii, then proceed to iv; if no, then rate as [circle] Low [0.1])

iii. **Rating** (use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function)

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Comments:

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) AA-1 - Woodson Creek Floodplain

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0	1	0
B. MT Natural Heritage Program Species Habitat	H	1	1	29.17
C. General Wildlife Habitat	H	.9	1	26.253
D. General Fish Habitat	M	.6	1	17.502
E. Flood Attenuation	M	.6	1	17.502
F. Short and Long Term Surface Water Storage	H	1	1	29.17
G. Sediment/Nutrient/Toxicant Removal	H	1	1	29.17
H. Sediment/Shoreline Stabilization	H	1	1	29.17
I. Production Export/Food Chain Support	H	.9	1	26.253
J. Groundwater Discharge/Recharge	H	1	1	29.17
K. Uniqueness	L	.2	1	5.834
L. Recreation/Education Potential	L	.3	1	8.751
Totals:		8.5	12	247.945
Percent of Possible Score		**70.83** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, 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**
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; if not satisfied, go to Category IV)
- ☑ Score of 1 functional point for Species Rated S1,S2, or S3 by the MT Natural Heritage Program; **or**
- ☑ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic 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**
- ☑ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

☐ **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; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

I **II** **III** **IV**

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project name Woodson Creek **2. MDT project#** **Control#**

3. Evaluation Date 7/20/2010 **4. Evaluators** B. Sandefur, E. Nyquist **5. Wetland/Site# (s)** AA-2 Woodson Creek -

6. Wetland Location(s): T 6S **R** 8E **Sec1** 9 **T** **R** **Sec2** 16

Approx Stationing or Mileposts

Watershed Missouri/Sun/Smith-7 **County** Meagher

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 7.3

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 7.3

How assessed: Measured e.g. by GPS

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Palustrine	none	Unconsolidated Bottom	Excavated	seasonally flooded	2
Slope	Palustrine	none	Emergent Wetland	Impounded	seasonally flooded	98

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Abundant

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

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

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

Adjacent parcels in agricultural production and cattle grazing

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

Cirsium arvense

iii. Brief descriptive summary of surrounding land use/habitat

AA is a wetland meadow dominated by Garrison creeping foxtail. Surrounding landuse consists of agriculture (wheat and hay production, cattle). Hydrology source is the Sixteen Mile Irrigation Ditch

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

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments:

SECTION PERTAINING TO FUNCTION _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 (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ○ **D** ○ **S**

Secondary habitat (list Species) ○ **D** ○ **S**

Incidental habitat (list species) ○ **D** ○ **S**

No usable habitat ◉ **S**

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
Functional Points and Rating	1H	.9H	.8H	.7M	.5L	.3L	0L

Sources for documented use MNHP, USFWS

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 (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ○ **D** ○ **S**

Secondary habitat (list Species) ○ **D** ◉ **S** Sandhill crane

Incidental habitat (list species) ○ **D** ◉ **S** Bald eagle

No usable habitat ○ **S**

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for the function)

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MNHP, observations during mitigation monitoring

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Moderate

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

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

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

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

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

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

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

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

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

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

Comments

14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., click ☑ **(NA)** here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], the Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Permanent/ Perennial			Seasonal/ Intermittent			Temporary/ Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading – 50 to 75% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - <50% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E=H, H=M, M=L, L=L]). *Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support?* Y ◯ N ◉ Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E=exceptional, H=high, M=moderate, L=low] for this function)

Types of fish known or suspected within AA	*Modified Habitat Quality (ii)*			
	Exceptional	High	Moderate	Low
Native game fish	1E	.9H	.7M	5M
Introduced game fish	.9H	.8H	..6M	.4M
Non-game fish	.7M	.6M	.5M	.3L
No fish	.5M	.3L	.2L	.1L

Comments

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, check ☑ **NA** here and proceed to the next function.)

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

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

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

Comments:

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

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

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

Comments:

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = Structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P=permanent/perennial; S/I=seasonal/intermittent; T/E/A=temporary/ephemeral or absent [see instructions for further definitions of these terms].)

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

Comments:

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

iii. Rating: Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H=high, L=low] for this function.

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments:

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: i. Is the AA a known rec./ed. Site ◯ Y ◉ **N** (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

i. **Check categories that apply to the AA:**____Educational/;scientific study;____Consumptive rec.;____Non-consumptive rec.;____Other

ii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** ◯ Y ◉ **N** (If yes, i to ii, then proceed to iv; if no, then rate as [circle] Low [0.1])

iii. **Rating** (use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function)

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Comments:

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) AA-2 Woodson Creek - West

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0	1	0
B. MT Natural Heritage Program Species Habitat	M	.6	1	4.38
C. General Wildlife Habitat	M	.7	1	5.11
D. General Fish Habitat	NA	0	0	0
E. Flood Attenuation	NA	0	0	0
F. Short and Long Term Surface Water Storage	M	.6	1	4.38
G. Sediment/Nutrient/Toxicant Removal	H	1	1	7.3
H. Sediment/Shoreline Stabilization	NA	0	0	0
I. Production Export/Food Chain Support	M	.6	1	4.38
J. Groundwater Discharge/Recharge	H	1	1	7.3
K. Uniqueness	L	.3	1	2.19
L. Recreation/Education Potential	M	.7	1	5.11
Totals:		5.5	9	40.15
Percent of Possible Score		**61.11** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, 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**
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; if not satisfied, go to Category IV)
- ☐ Score of 1 functional point for Species Rated S1,S2, or S3 by the MT Natural Heritage Program; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic 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**
- ☐ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

☑ **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; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

I **II** **III** **IV**

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project name Woodson Creek **2. MDT project#** **Control#**

3. Evaluation Date 7/20/2010 **4. Evaluators** B. Sandefur, E. Nyquist **5. Wetland/Site# (s)** AA-3 Woodson Creek -

6. Wetland Location(s): T 6S **R** 8E **Sec1** 9 **T** **R** **Sec2** 16

Approx Stationing or Mileposts

Watershed Missouri/Sun/Smith-7 **County** Meagher

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 31.23

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 31.23

How assessed: Measured e.g. by GPS

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Palustrine	none	Aquatic Bed	Excavated	semi-permanently flooded	5
Slope	Palustrine	none	Emergent Wetland		seasonally flooded	95

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Abundant

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

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

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

Adjacent parcels in agricultural production (hay, wheat, and cattle)

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

Cirsium arvense

iii. Brief descriptive summary of surrounding land use/habitat

AA is a wetland meadow dominated by Garrison Creeping foxtail. Surrounding landuse is agriculture. Hydrology sources are Woodson Creek and Sixteen Mile Irrigation Ditch.

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

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments:

SECTION PERTAINING TO FUNCTION _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 (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ○ **D** ○ **S**

Secondary habitat (list Species) ○ **D** ○ **S**

Incidental habitat (list species) ○ **D** ○ **S**

No usable habitat ◉ **S**

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
Functional Points and Rating	1H	.9H	.8H	.7M	.5L	.3L	0L

Sources for documented use MNHP, USFWS

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 (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ◉ **D** ○ **S** Sandhill crane

Secondary habitat (list Species) ○ **D** ○ **S**

Incidental habitat (list species) ◉ **D** ○ **S** Bald eagle

No usable habitat ○ **S**

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for the function)

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MNHP, observations during mitigation monitoring.

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Moderate

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

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

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

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

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

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

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

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

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

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

Comments

14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., click ☑ **(NA)** here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], the Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Permanent/ Perennial			Seasonal/ Intermittent			Temporary/ Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading – 50 to 75% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - <50% of streambank or shoreline within AA contains rip. Or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E=H, H=M, M=L, L=L]). *Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support?* Y ◯ N ◉ Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E=exceptional, H=high, M=moderate, L=low] for this function)

Types of fish known or suspected within AA	*Modified Habitat Quality (ii)*			
	Exceptional	High	Moderate	Low
Native game fish	1E	.9H	.7M	5M
Introduced game fish	.9H	.8H	..6M	.4M
Non-game fish	.7M	.6M	.5M	.3L
No fish	.5M	.3L	.2L	.1L

Comments

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

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

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

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

Comments:

Area could potentially receive overflow from adjacent 16 Mile Creek.

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

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

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

Comments:

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = Structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P=permanent/perennial; S/I=seasonal/intermittent; T/E/A=temporary/ephemeral or absent [see instructions for further definitions of these terms].)

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

Comments:

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

iii. Rating: Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H=high, L=low] for this function.

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments:

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: i. Is the AA a known rec./ed. Site ◯ Y ◉ **N** (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

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

ii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** ◯ Y ◉ **N** (If yes, i to ii, then proceed to iv; if no, then rate as [circle] Low [0.1])

iii. **Rating** (use the matrix below to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function)

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Comments:

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) AA-3 Woodson Creek - East

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0	1	0
B. MT Natural Heritage Program Species Habitat	H	1	1	31.23
C. General Wildlife Habitat	M	.7	1	21.861
D. General Fish Habitat	NA	0	0	0
E. Flood Attenuation	M	.4	1	12.492
F. Short and Long Term Surface Water Storage	H	.8	1	24.984
G. Sediment/Nutrient/Toxicant Removal	H	1	1	31.23
H. Sediment/Shoreline Stabilization	H	1	1	31.23
I. Production Export/Food Chain Support	H	.9	1	28.107
J. Groundwater Discharge/Recharge	H	1	1	31.23
K. Uniqueness	L	.2	1	6.246
L. Recreation/Education Potential	L	.3	1	9.369
Totals:		7.3	11	227.979
Percent of Possible Score		**66.36** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, 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**
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; if not satisfied, go to Category IV)
- ☑ Score of 1 functional point for Species Rated S1,S2, or S3 by the MT Natural Heritage Program; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic 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**
- ☐ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

☐ **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; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

I **II** **III** **IV**

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Woodson Creek
Meagher County, Montana

Photo Point 1 – *Photo 1*
Bearing: 208 Degrees
Location: North Side
Taken in 2008

Photo Point 1 – *Photo 1*
Bearing: 208 Degrees
Location: North Side
Taken in 2010

Photo Point 1 – *Photo 2*
Bearing: 226 Degrees
Location: North Side
Taken in 2008

Photo Point 1 – *Photo 2*
Bearing: 226 Degrees
Location: North Side
Taken in 2010

Photo Point 1 – *Photo 3*
Bearing: 249 Degrees
Location: North Side
Taken in 2008

Photo Point 1 – *Photo 3*
Bearing: 249 Degrees
Location: North Side
Taken in 2010

Photo Point 2 – *Photo 1* **Location:** East-central
Bearing: 197 Degrees **Taken in 2008**

Photo Point 2 – *Photo 1* **Location:** East-central
Bearing: 197 Degrees **Taken in 2010**

Photo Point 2 – *Photo 2* **Location:** East-central
Bearing: 230 Degrees **Taken in 2008**

Photo Point 2 – *Photo 2* **Location:** East-central
Bearing: 230 Degrees **Taken in 2010**

Photo Point 2 – *Photo 3* **Location:** East-central
Bearing: 266 Degrees **Taken in 2008**

Photo Point 2 – *Photo 3* **Location:** East-central
Bearing: 266 Degrees **Taken in 2010**

Photo Point 3 – *Photo 1* **Location:** West Side
Bearing: 95 Degrees **Taken in 2008**

Photo Point 3 – *Photo 1* **Location:** West Side
Bearing: 95 Degrees **Taken in 2010**

Photo Point 3 – *Photo 2* **Location:** West Side
Bearing: 132 Degrees **Taken in 2008**

Photo Point 3 – *Photo 2* **Location:** West Side
Bearing: 132 Degrees **Taken in 2010**

Photo Point 3 – *Photo 4* **Location:** West Side
Bearing: 224 Degrees **Taken in 2008**

Photo Point 3 – *Photo 4* **Location:** West Side
Bearing: 224 Degrees **Taken in 2010**

Photo Point 4 – *Photo 1* **Location:** East Side
Bearing: 203 Degrees **Taken in 2008**

Photo Point 4 – *Photo 1* **Location:** East Side
Bearing: 203 Degrees **Taken in 2010**

Photo Point 4 – *Photo 2* **Location:** East Side
Bearing: 225 Degrees **Taken in 2008**

Photo Point 4 – *Photo 2* **Location:** East Side
Bearing: 225 Degrees **Taken in 2010**

Photo Point 4 – *Photo 3* **Location:** East Side
Bearing: 262 Degrees **Taken in 2008**

Photo Point 4 – *Photo 3* **Location:** East Side
Bearing: 262 Degrees **Taken in 2010**

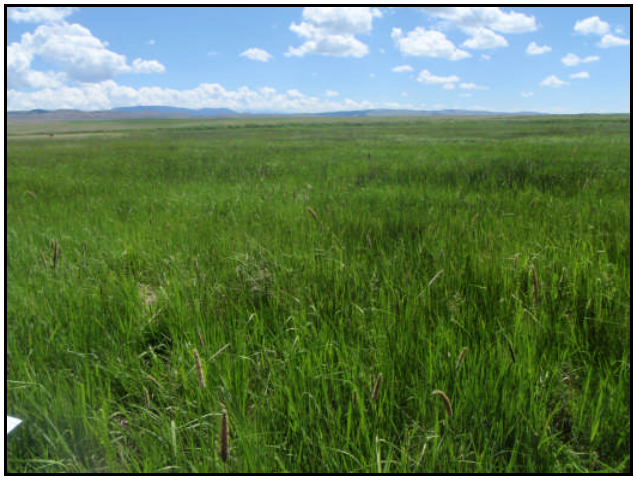
Photo Point 4 – *Photo 4*
Bearing: 296 Degrees
Location: East Side
Taken in 2008

Photo Point 4 – *Photo 4*
Bearing: 296 Degrees
Location: East Side
Taken in 2010

Photo Point 4 – *Photo 5*
Bearing: 324 Degrees
Location: East Side
Taken in 2008

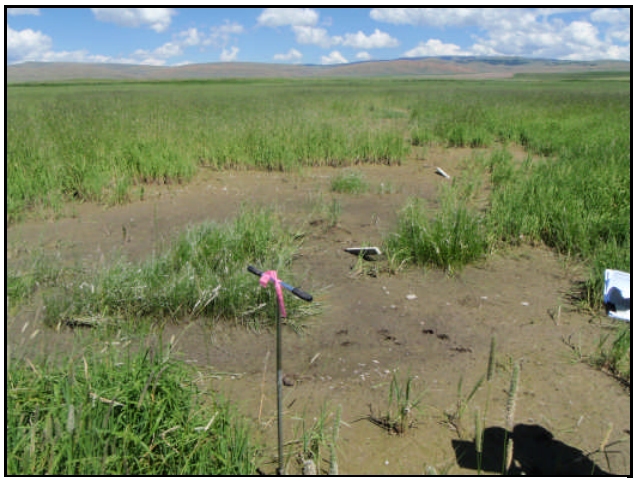
Photo Point 4 – *Photo 5*
Bearing: 324 Degrees
Location: East Side
Taken in 2010

Transect 1 – *Photo 1*
Bearing: 134 Degrees
Location: Start (west end)
Taken in 2008



Transect 1 – *Photo 1*
Bearing: 134 Degrees
Location: Start (west end)
Taken in 2010

Transect 1 – *Photo 2* **Location:** End
Bearing: 314 Degrees **Taken in 2010**



Transect 2 – *Photo 1* **Location:** Start
Bearing: 75 Degrees **Taken in 2010**

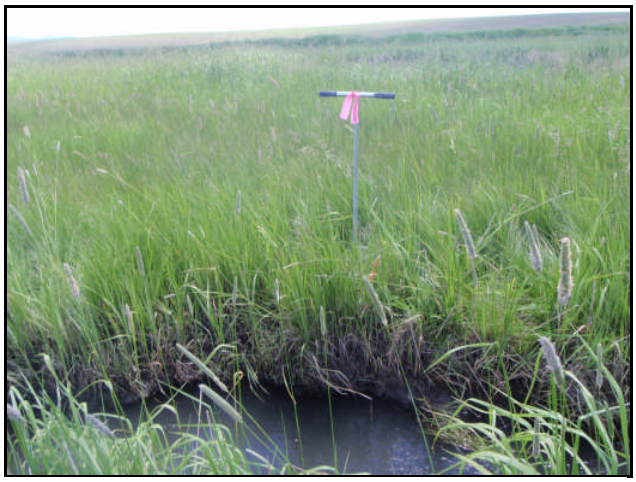
Transect 2 – *Photo 2* **Location:** End
Bearing: 255 Degrees **Taken in 2010**

Transect 3 – *Photo 1* **Location:** Start
Bearing: 187 Degrees **Taken in 2010**

Transect 3 – *Photo 1* **Location:** End
Bearing: 7 Degrees **Taken in 2010**

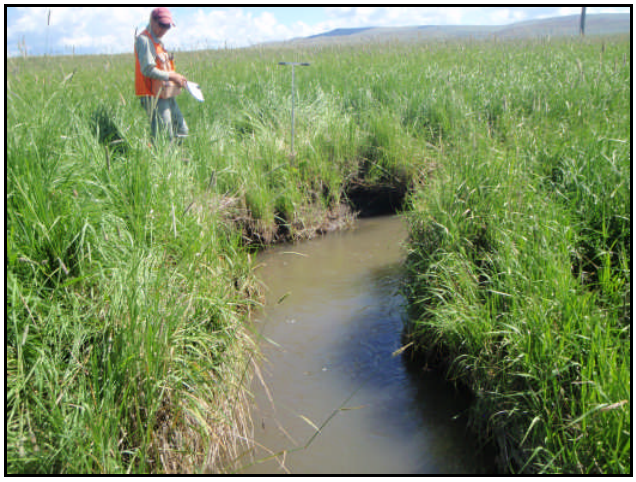
Intentionally Blank

Bank Erosion Pins #1 Location: Upstream site
Taken in 2008



Bank Erosion Pins #1 Location: Upstream site
Taken in 2010

Bank Erosion Pins #2 Location: Downstream site – facing upstream; erosion pins are located in the bank below the shovel.
Taken in 2008



Bank Erosion Pins #2 Location: Downstream site – facing upstream; erosion pins are located in the bank below the soil auger.
Taken in 2010

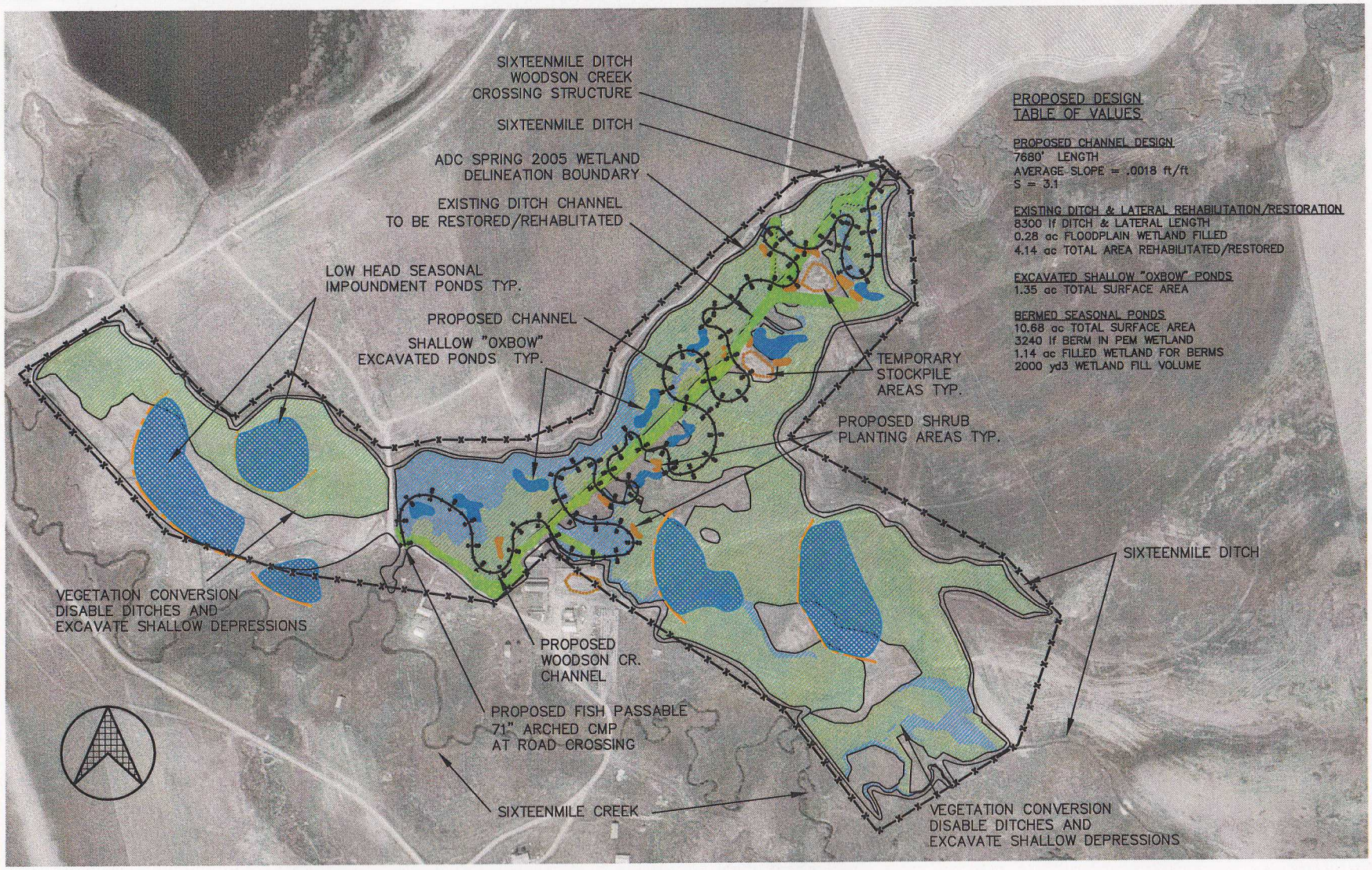
Bank Erosion Pin #1
Taken in 2010

Bank Erosion Pin #2
Taken in 2010

Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring
Woodson Creek
Meagher County, Montana



PROPOSED DESIGN
TABLE OF VALUES

PROPOSED CHANNEL DESIGN
7680' LENGTH
AVERAGE SLOPE = .0018 ft/ft
S = 3.1

EXISTING DITCH & LATERAL REHABILITATION/RESTORATION
8300 lf DITCH & LATERAL LENGTH
0.28 ac FLOODPLAIN WETLAND FILLED
4.14 ac TOTAL AREA REHABILITATED/RESTORED

EXCAVATED SHALLOW "OXBOW" PONDS
1.35 ac TOTAL SURFACE AREA

BERMED SEASONAL PONDS
10.68 ac TOTAL SURFACE AREA
3240 lf BERM IN PEM WETLAND
1.14 ac FILLED WETLAND FOR BERMS
2000 yd3 WETLAND FILL VOLUME

DESIGN PAGE

REV. NO.	REVISION DESCRIPTION	BY	REVISION DATE

SCALE: 1" = 300'
PROJECT NO. 205
DRAWN: bz
CHECK: --
DATE: 7/05/05

Woodson Creek
Stream Channel Restoration
Sixteen Mile Road
Madison County, MT
Sections 9 & 16 T6N R8E

woodson 404 plans

ACOE WETLAND CREDITING DESIGN PLAN

REVISION: 1

DRAWING NO.
FIGURE 3

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