MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2007

Perry Ranch
Glacier County, Montana

Prepared for:

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

Prepared by:

POST, BUCKLEY, SCHUH, AND JERNIGAN
801 North Last Chance Gulch, Suite 101
Helena, MT 59601-3360

December 2007

PBS&J Project No. B43088.00 - 0410

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1.0 INTRODUCTION

The Perry Ranch wetland mitigation site was constructed during early summer 2001 to mitigate for wetland impacts associated with Montana Department of Transportation (MDT) projects NH 1-3(12)225F (Browning-Meriwether) and F BRF 1-3(11)219 (Browning East & West). These two projects resulted in a combined projected wetland loss of approximately 14.7 acres.

This report documents the sixth year of monitoring at the Perry Ranch Wetland Mitigation site. The mitigation site is located approximately 13 miles west of Browning and four miles north of U.S. Highway 2 in Glacier County (**Figure 1**). The entire site occurs within the confines of the Tribally-owned Perry Ranch on the Blackfeet Indian Reservation and is within Watershed #8 (Marias).

The intent of the project was to create, via dike placement and shallow excavation, two wetland impoundments within historic oxbows located in the Cut Bank Creek floodplain (**Appendix D**). The inner oxbow impoundment, located adjacent to Cut Bank Creek, was designed to provide approximately 6.1 wetland acres with a maximum depth of 2.6 feet. The outer oxbow impoundment, located immediately north of the inner oxbow, was designed to provide approximately 21.5 wetland acres with a maximum three-foot depth.

Wetland hydrology at the inner oxbow would be provided via overbank flood flows, alluvial flow, and precipitation; flood flows and precipitation would source the outer oxbow. The site was designed to provide ephemeral surface water. It is anticipated that, over time, vegetation at the inner oxbow will be comprised of scrub/shrub and emergent communities with occasional cottonwoods scattered throughout. The outer oxbow would likely be dominated by emergent communities.

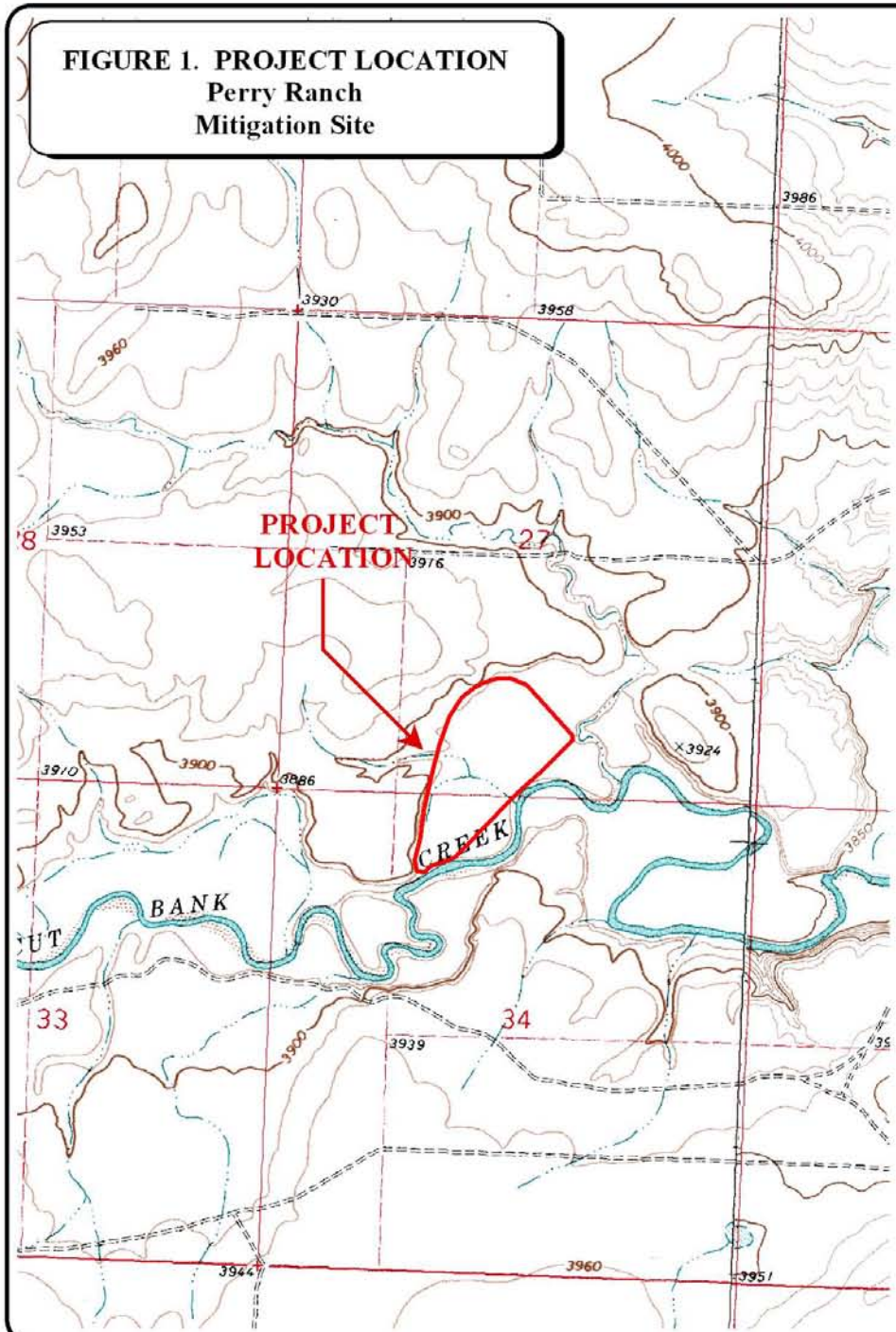
Prior to construction, approximately 2.3 acres of wetland occurred at the inner oxbow and approximately 1.1 acres occurred at the outer oxbow. The mitigation target of 27.6 acres is inclusive of these 3.4 acres of existing wetlands. This site has been monitored twice per year to document wetland and other biological attributes. No performance standards or success criteria were required by the U.S. Army Corps of Engineers (COE), MDT, Blackfeet Tribe, or other agencies. The monitoring area is illustrated in **Figure 2** (**Appendix A**)

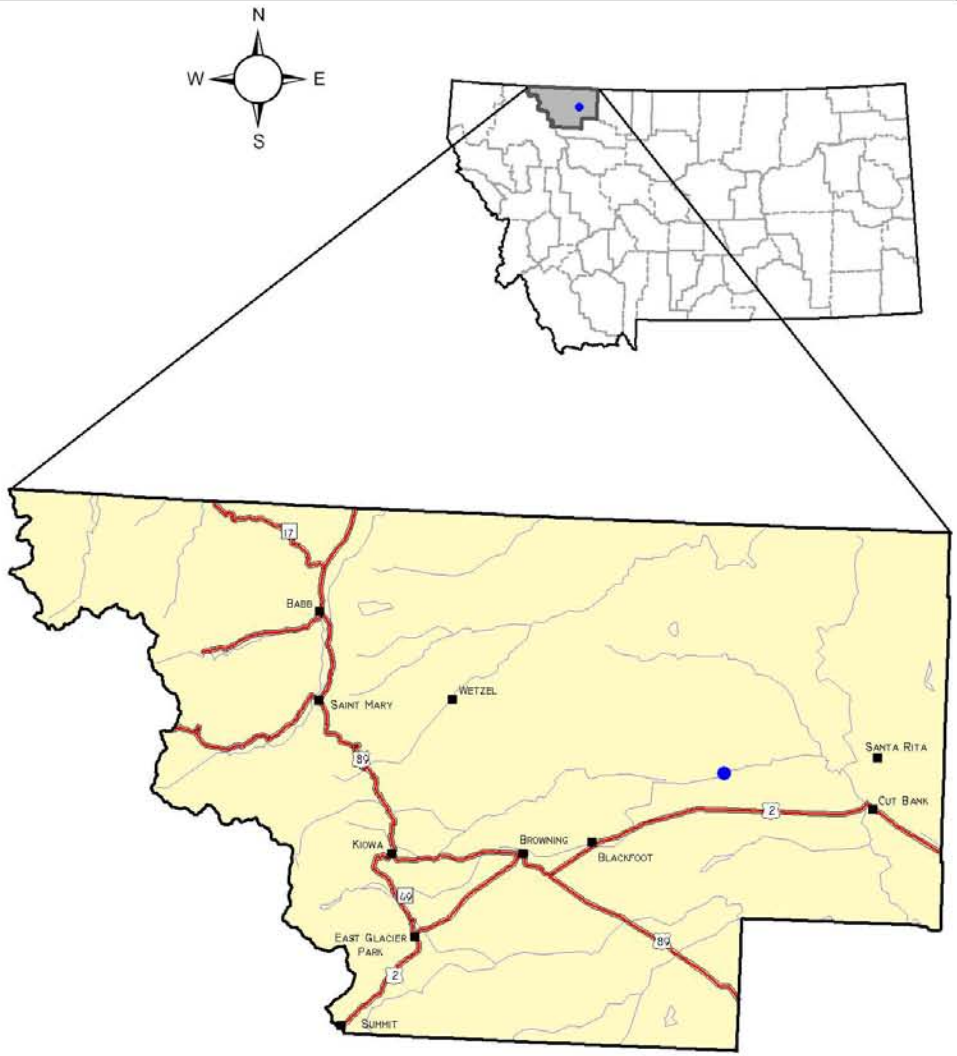
2.0 METHODS

2.1 Monitoring Dates and Activities

The site was visited on May 8th (spring) and July 17th (mid-season) of 2007. The primary purpose of the spring visit was to conduct a survey for birds and general wildlife.

FIGURE 1. PROJECT LOCATION
Perry Ranch
Mitigation Site





800 0 800 1600 FEET

1: 24,000

PROJECT #: 130091.020
DATE: DEC 2002
LOCATION:
PROJECT MANAGER: J. BERGLUND
DRAWN BY: B. NOECKER

LAND & WATER CONSULTING, INC.

1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

The mid-season visit was conducted in July to document vegetation, soil, and hydrologic conditions used to map jurisdictional wetlands. All information contained on the Wetland Mitigation Site Monitoring Form (**Appendix B**) was collected at this time. Activities typically conducted and information collected included: wetland delineation; vegetation community mapping; vegetation transect monitoring; soils data collection; hydrology data collection; bird and wildlife use documentation; macroinvertebrate sampling; photopoint sampling; and a non-engineering examination of the site.

2.2 Hydrology

Wetland hydrology at the inner oxbow (2.6-foot maximum depth) was to be provided via overbank flood flows, alluvial flow, and precipitation. Wetland hydrology at the outer oxbow (3-foot maximum depth) was to be provided via flood flows and precipitation. Impoundment areas are indicated on the proposed project plan sheets (**Appendix D**).

Hydrologic indicators were primarily evaluated during the mid-season visit. Wetland hydrology indicators were recorded using procedures outlined in the COE 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**).

All additional hydrologic data were recorded on the Wetland Mitigation Site Monitoring Form (**Appendix B**). The boundary between wetlands and open water aquatic habitats (no rooted vegetation) was mapped on an aerial photograph and an estimate of the average water depth at this boundary was recorded.

There were no groundwater monitoring wells at the site. Groundwater depths were only documented if they were located within 12 inches of the ground surface, which is depth at which soil pits are dug for purposes of delineating wetlands. Groundwater depths within soils pits were recorded onto COE Routine Wetland Delineation Data Forms (**Appendix B**).

2.3 Vegetation

General dominant species-based vegetation community types were delineated on the 2007 aerial photograph. Standardized community mapping was not employed as many of these systems are geared towards climax vegetation. Estimated percent cover of the dominant species in each community type was recorded on the Wetland Mitigation Site Monitoring Form (**Appendix B**). Plants observed were identified using Flora of the Pacific Northwest (Hitchcock and Conquist 1975) and Plants of Montana (Dorn 1984). Nomenclature follows that of Dorn (1984).

A single 10-foot wide belt transect was sampled during the mid-season visit to represent the range of current vegetation conditions (**Figure 2** in **Appendix A**). Percent cover was estimated for each vegetative species encountered within the "belt" within each community type using the following values: + (<1%); 1 (1-5%); 2 (6-10%); 3 (11-20%); 4 (21-50%); and 5 (>50%). Photographs of the transect were taken from both ends. No monitoring of planted species was conducted as no woody species were planted at the site.

2.4 Soils

Soils were evaluated during the mid-season visit in accordance with procedures outlined in the COE 1987 Wetland Delineation Manual. Soil data were recorded for each wetland determination point on the COE Routine Wetland Delineation Data Form (**Appendix B**). The most current NRCS terminology was used to describe hydric soils (USDA 1998). The 1980 Glacier Area soil survey was consulted relative to mapped soil units at the site.

2.5 Wetland Delineation

Wetland delineation was conducted during the mid-season visit in accordance with the 1987 COE Wetland Delineation Manual. Wetland and upland areas within the monitoring area were investigated for the presence of wetland hydrology, hydrophytic vegetation, and hydric soils. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). The information was recorded onto COE Routine Wetland Delineation Data Forms (**Appendix B**). In 2002, the wetland/upland boundaries were delineated using a GPS unit in conjunction with hand-mapping onto the aerial photograph. In 2007, wetland mapping revisions were accomplished using a combination of GPS coordinates and hand-mapping onto the 2007 aerial photograph. Wetland delineation data collected during 2007 were compared to pre-construction estimates in an effort to calculate additional wetland development since project construction.

2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations and other positive indicators of use, such as vocalizations, were recorded onto the Wetland Mitigation Site Monitoring Form during each site visit (**Appendix B**). Indicators of indirect use, such as tracks, scat, burrows, eggshells, skins, and bones were also recorded. Observations were recorded during all visits as the observer traversed the site while conducting other required activities. Direct sampling methods such as snap traps, live traps, and pitfall traps, were not implemented. A comprehensive list of wildlife species observed was compiled.

2.7 Birds

Bird observations were recorded during both site visits. No formal census plots, spot mapping, point counts, or strip transects were conducted. During the spring visit, observations were recorded in compliance with the Bird Survey Protocol (**Appendix E**). During the mid-season visit, bird observations were recorded incidental to other monitoring activities. During all visits, observations were categorized by species, activity code, and general habitat association on the Bird Survey Field Data Sheet (**Appendix B**). A comprehensive bird list was compiled using these observations. No birdhouses occur on the site.

2.8 Macroinvertebrates

No macroinvertebrate samples were collected in 2007 as no surface water was present during the mid-season visit.

2.9 Functional Assessment

A functional assessment was conducted using the 1999 MDT Montana Wetland Assessment Method (Berglund 1999). Field data necessary for this assessment were primarily collected during the mid-season site visit. The remainder of the functional assessment was completed in the office. A Functional Assessment Form was completed for the inner oxbow, outer oxbow, and northern excavated area (**Appendix B**).

2.10 Photographs

Photographs were taken showing the current land use surrounding the site, the upland buffer, the monitored area, and the vegetation transect (**Appendix C**). Three photograph points were established and shot each year from 2002 to 2007 (**Figure 2** in **Appendix A**). Panoramic type photographs were taken at these three photograph points (**Appendix C**). In 2007 MDT/Blackfoot Tribe established four permanent photo points for monitoring noxious weed populations.

2.11 GPS Data

During the 2002 and 2007 a resource grade GPS unit was used to mark the following locations: vegetation transect start and end, photograph points, wetland boundaries, soil pits, noxious weed populations, and reference landmarks. Procedures used for GPS mapping and aerial photography referencing are included in **Appendix E**.

2.12 Maintenance Needs

The dike along the east boundary was examined during the 2007 site visits for obvious signs of breaching, damage, or other problems. This did not constitute an engineering-level structural inspection, but rather a cursory examination. Current or future potential problems were documented.

3.0 RESULTS

3.1 Hydrology

Hydrology at the Perry Ranch Mitigation Site is determined by flow in Cut Bank Creek and by direct precipitation. These water sources interact with groundwater, which ultimately will drive wetland development. Inferences regarding hydrology at the site were made from a gauging station on Cut Bank Creek near Browning and at a weather station in Cut Bank.

Based on the period of record between December 1903 and July 2007, the mean annual precipitation at the Cut Bank weather station (#242173) was 7.86 inches (in) (WRCC 2007). The total precipitation received from January through July of 2007 was 4.64 in (WRCC 2007). The 2007 precipitation was mid-range when compared to this seven month period in 2006 (2.70 in), 2005 (9.21 in), 2004 (4.57 in), and 2003 (3.63 in) (WRCC 2007). It was assumed that

precipitation levels measured at the Cut Bank Airport would serve as an indicator of precipitation received at the mitigation site.

Flow in Cut Bank Creek near Browning (USGS 06098500) peaked at about 350 cubic feet per second (cfs) from early May through mid-June in 2007 (USGS 2007). In comparison, 2006 peak flows ranged from 600 to 900 cfs between late May and mid-June, 2005 peak flows ranged from 450 to 700 cfs between late May and early June, and 2004 peak flows ranged from 400 to 550 cfs between early May and early June (USGS 2006). Given the low 2007 peak streamflow, it is unlikely that the site was inundated between the spring and mid-season visits.

3.2 Vegetation

Vegetation community types are based on topography, hydrology, and plant composition. At Perry Ranch, shifts in plant composition have been observed annually in many communities. Vegetation communities delineated in 2006 remained the same in 2007. During 2007 seven vegetation community types were identified and mapped in the mitigation area: Type 1 - *Juncus balticus/Carex praegracilis*, Type 2 - *Eleocharis palustris/Polygonum amphibium*, Type 3 – *Upland Floodplain*, Type 3A – *Transitional Upland Floodplain*, Type 4- *Salix*/*Hordeum jubatum*/*Equisetum*, Type 5 – *Hordeum*, and Type 6 – *Upland* (**Figure 3** in **Appendix A**). Overall, dry soil conditions in 2007 caused plants to cure out faster and it appeared that plants rated as facultative or upland increased in abundance (compare photographs of PBSJ 2006 and PBSJ 2007 reports). As a result small changes in community boundaries occurred in 2007. A comprehensive plant species list has been maintained over the past five years for the Perry Ranch Mitigation Site (**Table 1; Monitoring Form** in **Appendix B**).

Vegetation Community Type 1 has occurred primarily as a fringe along the deeper wetland areas of the inner oxbow (**Figure 3** in **Appendix A**). The southern polygon of Type 1 did not meet criteria for wetland vegetation and/or hydrology in 2007 (**Soil Pits 4** and **5** in **COE Forms** of **Appendix B; Photo 4** in **Appendix C**). The polygon contained very dry soil and the plant community showed a strong presence of upland plants [e.g., yarrow (*Achillea millifolium*), prairie sage (*Artemisia ludoviciana*), leafy spurge (*Euphorbia esula*), and others]. As a result the size of Type 1 decreased in 2007. The northern portion of Type 1 appears to receive either more surface water via flooding and/or groundwater, such that a facultative wetland plant community (FACW) has been maintained.

Vegetation Community Type 2 occupied deeper wetland areas that retain surface water for longer durations (**Photos 6** and **7** in **Appendix C**; **Figure 3** in **Appendix A**). However, 2006 and 2007 have been dry and it appears that groundwater movement may be sustaining the Type 2 community into the Outer Oxbow. In July 2007 there was no inundation except for a few small pools in the inner oxbow. Soil moisture conditions were the driest observed since 2005

Table 1: ***2002-2007 Perry Ranch vegetation species list.***

Scientific Name	Region 9 (Northwest) Wetland Indicator	Scientific Name	Region 9 (Northwest) Wetland Indicator
Achillea millefolium	FACU	*Hordeum jubatum*	FAC+
Agropyron intermedium	--	*Juncus balticus*	OBL
Agropyron repens	FACU	*Kochia scoparia*	FAC
Agropyron smithii	--	*Koeleria pyramidata*	--
Agropyon trachycaulum	FAC	*Medicago sativa*	--
Agrostis alba	FACW	*Melilotus alba*	FACU
Alopecurus pratensis	FACW	*Melilotus officinalis*	FACU
Amaranthus retroflexus	FACU+	*Mentha arvensis*	FAC
Artemisia frigida	--	*Opuntia* spp.	--
Artemisia ludoviciana	--	*Phalaris arundinacea*	FACW
Aster (*pansus*)	(--)	*Phleum pretense*	FAC-
Atriplex spp.	--	*Plantago hirtella*	FACW
Bouteloua gracilis	--	*Plantago major*	FAC+
Brassica kaber	--	*Poa annua*	FAC-
Bromus inermis	--	*Poa pratensis*	FACU+
Cardaria draba	--	*Polygonum amphibium*	OBL
Carex lanuginosa	OBL	*Potentilla anserina*	OBL
Carex praegracilis	FACW	*Potentilla* (*gracilis*)	(FAC)
Chenopodium album	FAC	*Rosa arkansana*	NI
Cirsium arvense	FAC-	*Rumex crispus*	FACW
Cynoglossum officinale	--	*Rumex maritimus*	OBL
Dactylis glomerata	FACU	*Salix amygdaloides*	FACW
Descurainia pinnata	--	*Salix exigua*	OBL
Distichlis spicata	FAC+	*Salix lutea*	OBL
Eleocharis acicularis	OBL	*Sisymbrium altissimum*	--
Eleocharis palustris	OBL	*Solidago canadensis*	FACU
Epilobium ciliatum	FACW-	*Smilacina stellata*	FAC-
Equisetum arvense	FAC	*Spartina pectinata*	OBL
Equisetum hyemale	FACW	*Stipa viridula*	--
Euphorbia esula	--	*Symphoricarpos occidentalis*	--
Gaillardia aristata	---	*Taraxacum officinale*	FACU
Glyceria elata	FACW+	*Thlaspi arvense*	--
Glycyrrhiza lepidota	FAC+	*Triglochin maritimum*	OBL
Grindelia squarrosa	--	*Typha latifolia*	OBL

Bolded species indicate those documented in the analysis area for the first time in 2007.

(**Soil Pits 3**, **7**, and **10** in **COE Forms** of **Appendix B**). Type 2 in the inner oxbow has remained a strong-hold for obligate wetland plants such as water smartweed (*Polygonum amphibium*). Type 2 in the outer oxbow continued to be dominated by a mosaic of obligate wetland plants [e.g., silverweed (*Potentilla anserina*), least spikerush (*Eleocharis palustris*), and water smartweed], and facultative wetland plants [e.g., curly dock (*Rumex crispus*) and meadow foxtail (*Alopecurus pratensis*)] (**Photo 8** in **Appendix C**). In addition, fox-tail barley (*Hordeum jubatum*) was the only significant facultative plant species present in the outer oxbow. Approximately 100 feet of the ditch connecting the inner and outer oxbows also met wetland criteria for soils, plants, and hydrology for the second time in five years.

Vegetation Community Type 3 is upland floodplain habitat (**Figure 3** in **Appendix A**). It is dominated by snowberry, rose, smooth brome (*Bromus inermis*), quackgrass (*Agropyron repens*), timothy (*Phleum pratense*), intermediate wheatgrass (*Agropyron intermedium*), yellow sweet clover (*Melilotus officinalis*), kochia (*Kochia scoparia*), leafy spurge (*Euphorbia esula*), Canada thistle (*Cirsium arvense*) and others. A subset of this community is Type 3A – *Transitional Upland Floodplain*. In 2007 Type 3A continued to show both facultative plants and facultative wetland plants, but with very dry soils (**Figure 3** in **Appendix A**).

Vegetation Community Type 4 occurs primarily within excavated portions of the inner oxbow, and is characterized by mudflat colonized by wetland plants (**Figure 3** in **Appendix A**; **Photo 7** in **Appendix C**). Since 2003, the Type 4 community has demonstrated significant growth in sandbar willow (*Salix exigua*) whips, field horsetail (*Equisetum arvense*), silverweed (*Potentilla anserina*), creeping spikerush, reed canarygrass (*Phalaris arundinacea*), and others (**Figure 3** in **Appendix A**; **Photo 5** in **Appendix C**). Facultative wetland and obligate plant species have become fairly dense in Type 4. In 2006 the community was renamed as Type 4 – *Salix*/*Hordeum*/*Equisetum* to more accurately reflect its components. Despite the dry year a few portions of Type 4 were saturated within 12 inches of the soil surface (**Soil Pit 6** in **COE Forms** of **Appendix B**). Despite the wetland development, leafy spurge and Canada thistle are present within and bordering the Type 4 community.

The extreme northern portion of the project area (which contains the designed island) also fluctuates in community development based on the presence of water. In 2005 this area was mapped as Type 7 - Open Water/Mudflat and was inundated such that the foxtail barley community had died. The Type 5 – *Hordeum jubatum* community has sustained its self in 2006 and 2007, implying that groundwater may be influencing the vegetation community (**Photo 9** in **Appendix C; Figure 3** in **Appendix A**). In 2006 a mosaic of saturated and dry surface soils were observed. In 2007 these surface soils were dry, but between from 6 - 12 inches soil was very moist (**Soil Pit 1** in **COE Forms** of **Appendix B**). A perimeter of actively growing yellow and sandbar willow whips continue to develop along with separate patches of horsetail (E. arvense), meadow foxtail (*Alopecurus pratensis*), and Canada thistle.

Vegetation Community Type 6 is upland habitat that occupies the slopes north and west of the project area. These adjacent slopes are primarily colonized by native species, such as phlox (*Phlox* spp.), prickly pear (*Opuntia* spp.), blanket flower (*Gaillardia aristata*), lupine (*Lupinus* spp.), and blue grama (*Bouteloua gracilis*).

Three noxious weed species were found on the Perry Ranch Wetland Mitigation site: Canada thistle, hound's-tongue (*Cynoglossum officinale*), and leafy spurge. These noxious weed locations were partially mapped (**Figure 3** in **Appendix A**). All species are rated as Category 1 noxious weeds. In response to last year's monitoring report, MDT and the Blackfeet Tribe released bio-control and created four photo points to monitor their effect (**Figure 2** in **Appendix A**). Blackfeet weed control personnel are trying to avoid the use of herbicides at this site due to its proximity to Cut Bank Creek.

Leafy spurge was first documented as a small occurrence in Community Type 4 in 2005. In 2006 it was commonly found in Community Types 1, 3, and 4 within the southern half of the

project area; in 2007 its population remained abundant (**Photo 14-20** in **Appendix C**). Leafy Spurge Flea Beetles (*Aphthona* spp.) were released on July 19, 2007 at two locations within and at two locations outside the Perry Ranch Mitigation Site (Bandel pers. comm.). Adult flea beetles feed on foliage during the summer while larvae feed on root hairs and young roots, which compromise the plant's ability to take up water and nutrients (Integrated Weed Control 2007). Comparison photos were taken prior to and after release of the beetles ((**Photo 14-19** in **Appendix C**). It was observed on August 21st that many of the leafy spurge plants had dried up fruits (infertile) (**Photo 20** in **Appendix C**). It is possible that the released flea beetles were responsible for this fruit infertility. Although reducing seed production is important, retarding development of the rhizomes will be necessary to reduce the population.

Canada thistle has been common throughout the site (**Figure 3** in **Appendix A**). It is primarily found in the Type 3 community where soils are drier. The Canada thistle stem mining weevil (*Hadroplontus* [*Ceutrorhynchus*] *litura*) was released at two areas within the mitigation site on or around September 15, 2007. Young larvae hatch on young leaves and stem tissue and bore into the main stem of the plant; Older larvae feed on the stem, crown, and root (Integrated Weed Control 2007). Research completed in Canada showed that a rust fungus disease, fatal for the thistle, more than doubled on plants where this weevil was present (Integrated Weed Control 2007). One photo point was also established to monitor the effectiveness of the bio-control (**Figure 2** in **Appendix A**; **Photos 12** and **13** in **Appendix C**).

Hound's-tongue was found for the first time within the mitigation site. Two plants were found at one locality on the boundary of Communities Type 2 and Type 3 (**Figure 3** in **Appendix A**). Though it was destroyed with a shovel, the roots were not removed. It will be necessary to bag and remove it from the site next year.

From 2002 to 2006 vegetation data has been recorded from the same transect (**Monitoring Data Forms** in **Appendix B**), summarized in tabular format (**Table 2**), and graphically illustrated (**Charts 1** and **2)**. Photographs were taken at the start and end of the transect (**Photos 10** and **11** in **Appendix C**). Inundation along the transect was not observed in 2007 and soils were moist to dry. Overall, the area of Type 2 wetland remained the same in 2007 while upland increased slightly (**Table 2**; **Charts 1** and **2**). In 2007 the line between Type 3 - *Upland Floodplain* and Type 3A – *Transitional Upland Floodplain* remained apparent and was based on plant cover and not soils. In 2007 the plant cover and soil data indicated that soil is moister on the west side and drier on the east side of the ditch (**Soil Pits 8** and **9** in **COE Forms** of **Appendix B**). However, wetland criteria were still not met in the Type 3A polygon. For Type 3A to transition into wetland would require inundation.

Table 2: ***Transect 1 data summary for each year monitored.***

Monitoring Year	2002	2003	2004	2005	2006	2007
Transect Length (feet)	532	532	532	532	532	532
# Vegetation Community Transitions along Transect	4	5	5	4	4	4
# Vegetation Communities along Transect	3	3	3	4	4	4
# Hydrophytic Vegetation Communities along Transect	0	0	0	1	1	1
Total Vegetative Species	18	25	20	26	28	30
Total Hydrophytic Species	6	14	10	13	15	11
Total Upland Species	12	11	10	13	13	19
Estimated % Total Vegetative Cover	35	45	90	80	90	95
% Transect Length Comprised of Hydrophytic Vegetation Communities	0	0	0	22	23	23
% Transect Length Comprised of Upland Vegetation Communities	40	50	100	78	77	77
% Transect Length Comprised of Unvegetated Open Water	0	0	0	0	0	0
% Transect Length Comprised of Bare Substrate	60	50	0	0	0	0

Chart 1: ***Transect maps showing vegetation types of Transect 1 from start (0 feet) to end (532 feet) for each year monitored.***

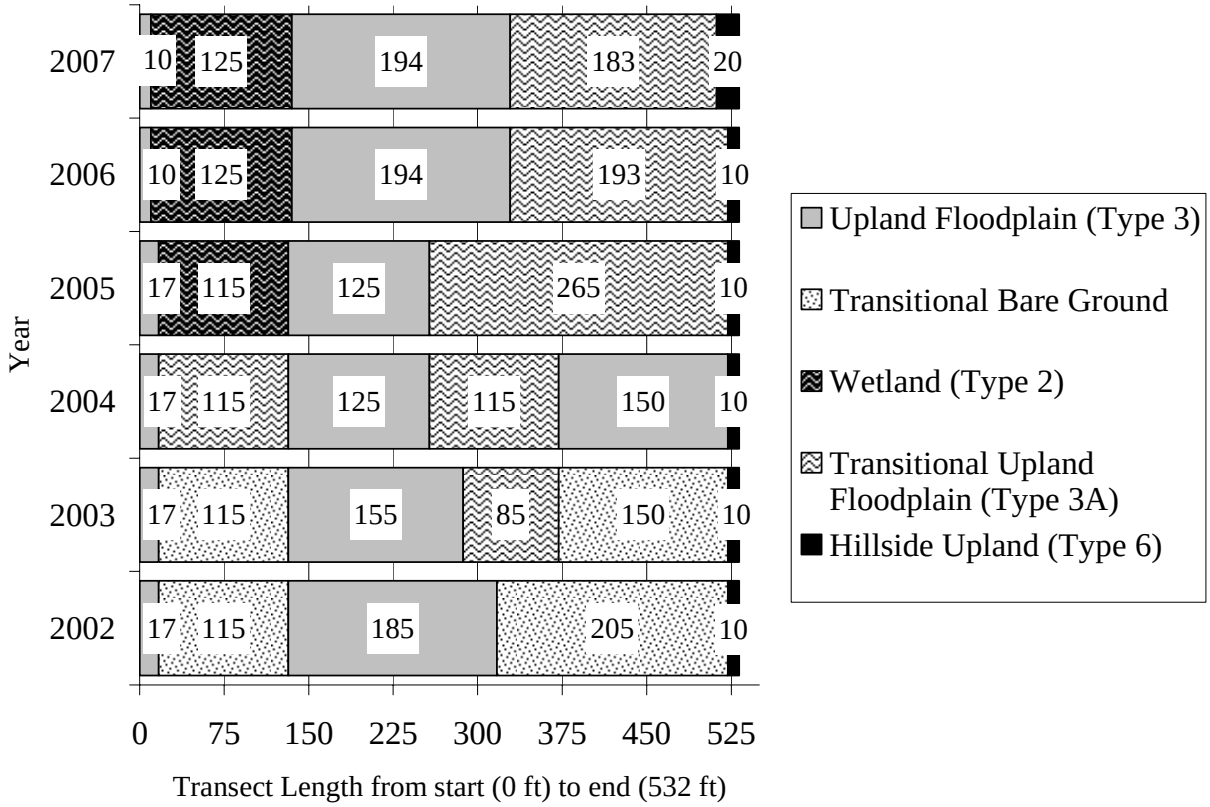
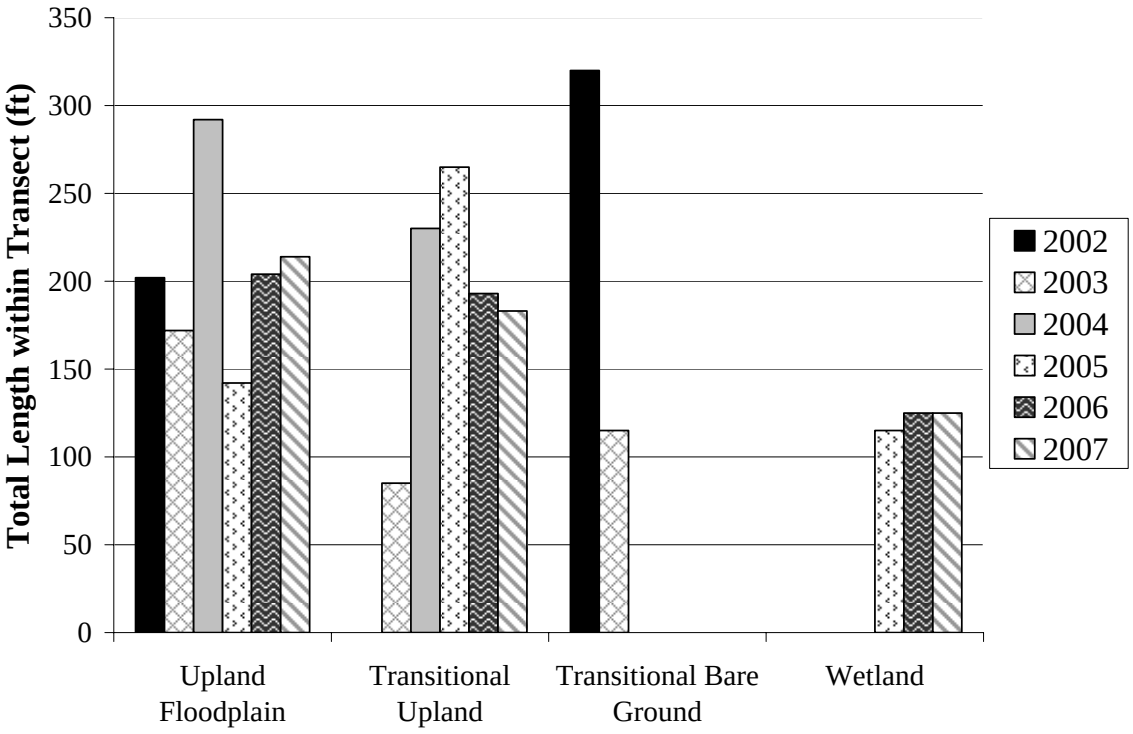


Chart 2: ***Total length of each vegetation community within Transect 1 for 2002 to 2007.***



3.3 Soils

Soils on the vast majority of the site were mapped as Kiwanis fine sandy loam, 0-2 percent slopes (NRCS 1980). This well drained soil typically occurs on terraces and is subject to flooding as a result of winter ice jams (NRCS 1980). The Kiwanis soil type is generally considered non-hydric by the NRCS (NRCS 2006).

Matrix soil colors and textures have remained fairly stable during the five years of monitoring. The B Horizon soils in wetland portions of the project area ranged from silty clay loam to sandy clay loam with a matrix color ranging from 2.5Y3/2 to 10YR3/2 (**COE Forms** in **Appendix B**). Mottles in the matrix soil indicate a fluctuating water table. Mottles were present in vegetation communities Type 2, Type 4, and Type 5, and ranged in colors from 10YR3/4 to 7.5YR4/6 (**COE Forms** in **Appendix B**).

Along Transect 1, soil matrix colors in the Type 2 community have remained the same since 2004; mottles have not yet developed, though oxidized rhizospheres have been abundantly observed in 2005 through 2007 (**COE Forms** in **Appendix B**). Oxidized rhizospheres indicate that the soil had been flooded with water long enough that the plants transported oxygen from the leaves to the roots. Soils within the Type 3A – *Transitional Upland* lacked mottles, though a few oxidized rhizospheres were present in one of the two soil pits (**COE Forms** in **Appendix B**).

3.4 Wetland Delineation

Wetland boundaries were re-delineated in 2007, based upon vegetation, soil, and hydrological data taken from at least 10 soil pit locations (**Figure 3** in **Appendix A**; **COE Forms** in **Appendix B)**. For each year from 2002 to 2007, the aerial extent of all aquatic and wetland habitats have been mapped and summarized (**Table 3**).

Table 3. ***Aerial coverage of aquatic habitats from 2002 to 2007 at Perry Ranch.***

Aquatic Habitat	Pre-Construction (acre)	2002 (acre)	2003 (acre)	2004 (acre)	2005 (acre)	2006 (acre)	2007 (acre)
Wetland	3.40	10.09	12.41	12.33	13.65	18.97	19.96
Open Water / Mudflat	0.00	7.83	6.20	0.00	6.39	0.00	0.00
TOTAL	**3.40**	**17.92**	**18.61**	**12.33**	**20.04**	**18.97**	**19.96**

Almost 20 acres of wetlands presently occur on the site (**Table 3**; **Figure 3** in **Appendix A**). This represents an increase in acreage from 2006. The Type 1 Wetland a showed significant decline in area as it has gradually become drier since 2005, if not before. However, the re-delineation of Type 2 showed significant gains in the Outer Oxbow in 2007. The Northern Excavated Area also showed a slight increase in wetland area from 2006. However, the Northern Excavated Area still remains marginal for wetland conditions.

Approximately 3.4 acres of wetland occurred at the site prior to construction (**Table 3**). The 27.6-acre mitigation goal is inclusive of these 3.4 acres of pre-existing wetlands. Consequently, the net goal for this project is to create 24.2 wetland acres. As of 2006 the site has netted 16.56 wetland acres, or 68% of the project target.

3.5 Wildlife

A comprehensive list of wildlife species (or their sign) observed at the project site has been maintained from 2002 to 2007 (**Table 4**). For each bird species observed, information on their activity and habitat use was also recorded (**Bird Survey Form** in **Appendix B**). The site provides habitat for many types of wildlife such as deer, waterfowl, and amphibians.

Ten bird species were noted at the mitigation site during the course of the 2007 monitoring season. No birdhouses were installed at this site. Western chorus frogs (*Pseudacris triseriata*) have been abundant in the past, and were heard during the May 2007 visit.

The northern leopard frog (*Rana pipiens*) is globally ranked as a G5 indicating it is globally common, widespread, and abundant. In Montana, this species has been assigned the rank of S1 (critically imperiled) in the intermountain valleys and S3 (rare occurrence and/or restricted range and/or vulnerable to extinction) in the Great Plains region (MTNHP 2006). The inner and outer oxbow is considered documented secondary habitat for this species because it has been present in areas of where surface water is intermittent. In 2002 (6-8 individuals) and 2005 (4 individuals), northern leopard frogs were observed in the outer oxbow. In 2006, one northern leopard frog was observed on the north side of the inlet channel. In 2007 the northern leopard frog was not observed.

Table 4: ***Fish and wildlife species observed on the Perry Ranch Mitigation Site from 2002 to 2007.***

FISH	
None	
AMPHIBIAN	
Northern Leopard Frog (*Rana pipiens*)	**Western Chorus Frog (*Pseudacris triseriata*)**
REPTILE	
None	
BIRD	
American Avocet (*Recurvirostra americana*)	Lesser Scaup (*Aythya affinis*)
American Robin (*Turdus migratorius*)	Long-billed Dowitcher (*Limnodromus scolopaceus*)Mallard (*Anas platyrhynchos*)
American White Pelican (*Pelecanus erythrorhynchos*)	Northern Harrier (*Circus cyaneus*)
Bank Swallow (*Riparia riparia*)	Northern Rough-winged Swallow (*Stelgidopteryx serripennis*)
Barn Swallow (*Hirundo rustica*)	Northern Shoveler (*Anas clypeata*)
Blue-winged Teal (*Anas discors*)	**Red-winged Blackbird (*Agelaius phoeniceus)***
Brewer's Blackbird (*Euphagus cyanocephalus*)	**Red-tailed Hawk (*Buteo jamaicensis*)**
Canada Goose (*Branta Canadensis*)	**Savannah Sparrow (*Passerculus sandwichensis*)**
Chukar (*Alectoris chukar*)	Semipalmated Plover (*Charadrius semipalmatus*)
Cinnamon Teal (*Anas cyanoptera*)	Solitary Sandpiper (*Tringa solitaria*)
Cliff Swallow (*Petrochelidon pyrrhonota*)	Spotted Sandpiper (*Actitis macularia*)
Common Nighthawk (*Chordeiles minor*)	**Vesper Sparrow (*Pooecetes gramineus*)**
Common Snipe (*Gallinago gallinago*)	**Western Meadowlark (*Sturnella neglecta*)**
Double-crested Cormorant (*Phalacrocorax auritus*)	Western Sandpiper (*Calidris mauri*)
Eastern Kingbird (*Tyrannus tyrannus*)	Willet (*Catoptrophorus semipalmatus*)
Franklin's Gull (*Larus pipixcan*)	Wilson's Phalarope (*Phalaropus tricolor*)
Great Blue Heron (*Ardea herodias*)	Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)
Gray Partridge (*Perdix perdix*)	
Horned Lark (*Eremophila alpestris*)	
Killdeer (*Charadrius vociferous*)	
MAMMAL	
American Badger (*Taxidea taxus*)	Richardson's Ground Squirrel (*Spermophilus richardsonii*)
Coyote (*Canis latrans*)	White-tailed Deer (*Odocoileus virginianus*)
Deer (*Odocoileus* spp.)	
Raccoon (*Procyon lotor*)	

Bolded species were observed during 2007. All other species were observed during one or more of the previous monitoring years, but not during 2007.

3.6 Macroinvertebrates

No macroinvertebrate sample was collected during the July 2007 site visit because there was no surface inundation. Over the 5-year monitoring period, macroinvertebrates were sampled in 2002 and 2005 when surface water was present in the outer oxbow. Conversely, no macroinvertebrate sample was taken in 2003, 2004, 2006, and 2007.

3.7 Functional Assessment

Functional assessment forms were completed for the inner oxbow, outer oxbow, and the northern excavated area (**Appendix B)** and the results were summarized (**Table 5**). As wetlands have developed within the oxbows and northern excavated area, so have their associated functions and values. In 2007, the inner oxbow rating remained a Category II site (**Table 5**). A large scrub-shrub (willow) component continues to develop within Type 4 Wetland (**Appendix B**). In 2007, the outer oxbow maintained its Category II status, and the northern excavated area remained a Category III site (**Table 5**). It rated lower primarily because of its lower value associated with rare and general wildlife species and production export/food chain support. It appears to be maintaining this category because it is being fed by groundwater; however, soils will need to be inundated or saturated for a longer period for it can increase in function or value.

Table 5: ***Summary of baseline and 2007 wetland function/ value ratings and functional points at the Perry Ranch Mitigation Project.***

Function and Value Parameters from the 1999 MDT Montana Wetland Assessment Method[1]	Pre-Construction (1997 method)		Post-Construction (1999 method)		
	Inner Oxbow	Outer Oxbow	2007 Inner Oxbow	2007 Outer Oxbow	2007 Northern Excavated Area
Listed/Proposed TE Species Habitat	Low (0.1)	Low (0.1)	Low (0.3)	Low (0.3)	Low (0.3)
MTNHP Species Habitat	None (0.0)	None (0.0)	Mod (0.7)	Mod (0.7)	Mod (0.6)
General Wildlife Habitat	Mod (0.4)	Low (0.1)	Mod (0.7)	Mod (0.7)	Mod (0.4)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.5)	Low (0.2)	Mod (0.5)	Mod (0.5)	Mod (0.5)
Short and Long Term Surface Water Storage	--	--	High (0.9)	High (0.9)	High (0.9)
Sediment, Nutrient, Toxicant Removal	Mod (0.5)	Mod (0.5)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	NA	NA	NA	NA	NA
Production Export/Food Chain Support	Mod (0.7)	Mod (0.6)	Mod (0.7)	Mod (0.6)	Mod (0.7)
Groundwater Discharge/Recharge	High (1.0)	Low (0.1)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.3)	Low (0.2)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential	Low (0.1)	Low (0.1)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Actual Points/Possible Points	4.4 / 10	2.7 /10	6.9 / 10	6.8 / 10	6.5 / 10
% of Possible Score Achieved	44%	27%	69%	68%	65%
Overall Category	III	IV	II	II	III
Total Acreage of Assessed Wetlands and Other Aquatic Habitats within Site Boundaries (ac)	**2.30**	**1.10**	**5.52**	**7.97**	**6.47**
Functional Units (acreage x actual points)	**10.12**	**2.97**	**38.09**	**54.20**	**42.1**
Net Acreage Gain (ac)	**NA**	**NA**	5.52 – 2.30 = **3.22**	7.97 – 1.10 = **6.87**	6.47 - 0.00 = **6.47**
Net Functional Unit Gain (fu)	**NA**	**NA**	38.09-10.12 = **27.97**	54.20 – 2.97 = **51.23**	42.1 – 0.00 = **42.1**
Total Functional Unit Gain	**121.3**				

[1] See completed MDT functional assessment forms in **Appendix B** for further detail.

The functional assessment completed prior to construction is not directly comparable with that of 2007 because two different renditions of the MDT Functional Assessment Method were used (**Table 5**). However, a general comparison provides a general sense of where functions have improved. Since pre-construction, the Inner Oxbow has gained 27.97 functional units in the following functions and values: MTNHP and general wildlife habitat; sediment/nutrient/toxicant removal; uniqueness; and recreation/education potential (**Table 5**). When compared to previous years, the Inner Oxbow has actually lost functional units because the Type 1 Wetland area has gradually reverted to upland because it lacks sufficient hydrology. Since pre-construction, the Outer Oxbow has gained 51.23 functional units in the following functions and values: MTNHP and general wildlife habitat; flood attenuation; sediment/nutrient/toxicant removal; groundwater discharge/recharge; uniqueness; and recreation/education potential (**Table 5**). When compare to previous years this represents an increase in functional units and is attributable to an increase in area (Type 2 Wetland) in 2007. Since pre-construction the northern excavated area has gained 42 functional units in all the value and function parameters (**Table 5**). The increase in functional units in 2007 is also attributable to a slight increase in wetland area. In 2007, the total 121 functional units represent the net gain for the Perry Ranch Wetland Mitigation Site (**Table 5**).

3.8 Photographs

A 2007 aerial photograph was taken by MDT and used as the base photograph for **Figures 2** and **3** (**Appendix A**). Representative panoramic and single frame photographs were taken from established photo-points (**Appendix C)**.

3.9 Maintenance Needs/Recommendations

Several dike problems were noted during the 2002 summer visit, repaired during 2003, and have been stable into 2007. However, it seems that the site is not getting sufficient water from Cut Bank Creek either because streamflows have been insufficient or because the inlet channel is too high. The Blackfeet Tribe and MDT have developed a weed plan for the Perry Ranch site. Bio-control was established for leafy spurge and Canada thistle and will be monitored through aerial photograph assessments and at four established Weed Photo Points. Leafy spurge is fairly apparent on the 2006 and 2007 aerial photographs as yellow-green patches. It is recommended that the two occurrences of hound's-tongue be pulled, bagged, and removed from the site in 2008.

3.10 Current Credit Summary

No specific performance criteria were required to be met at this site in order to document its success. In general, the site appears to be developing as designed, subject to the limitations of dry and wet years.

Approximately 19.9 acres of wetlands presently occur on the site (**Table 3**; **Figure 3** in **Appendix A**). Approximately 3.4 acres of wetland occurred at the site prior to construction (**Table 3**). The 27.6-acre mitigation goal is inclusive of these 3.4 acres of pre-existing wetlands. Consequently, the net goal for this project is to create 24.2 acres. As of 2007 the site has netted 16.56 wetland acres, or 68% of the project target.

4.0 REFERENCES

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Appendix A

FIGURES 2 & 3

MDT Wetland Mitigation Monitoring
Perry Ranch
Glacier County, Montana

Figure 2 - 2007 Monitoring Activity Locations

LEGEND

Monitoring Area Limits
Vegetation Transect
Photo Point Location
Weed Photo Point Location
Soil Pit Location
Macroinvertebrate Sample Point (2002 and 2005)
Base Photograph Date: July 05, 2007

N
E
S
W

200' 100' 0 100' 200'
1"=200'

MONITORING AREA LIMITS
PP2
PP1
End
Soil Pit 9
Soil Pit 8
Vegetation Transect
Soil Pit 6
Soil Pit 3
INNER OXBOW
Weed PP3
PP3
Soil Pit 5
Soil Pit 2
Soil Pit 4
Soil Pit 7
Begin
Soil Pit 10
NORTHERN EXCAVATED AREA
Soil Pit 1
MS-1
Weed PP2
Weed PP1
MONITORING AREA LIMITS
MONITORING AREA LIMITS
OUTER OXBOW

PROJECT NAME
MDT Perry Ranch Wetland Mitigation
DRAWING TITLE
2007 Monitoring Activity Locations

DRAWN: LLL
PROJ MGR: A. Pipp
CHECKED:
APPVD:
PROJ NO: B43088.305
LOCATION: Perry Ranch
SCALE: 1"= 200'
FILE NAME: L:\B43054.305Perry\Ranch\dwg\Perry2007AM2.dwg

PBSJ
1120 Cedar
Missoula, MT 59802

FIGURE
2 OF 3
REV -
Nov/16/2007

Figure 3 - 2007 Mapped Site Features

LEGEND

Monitoring Area Limits
Wetland Limits
Vegetation Community Boundary
Upland Island

Base Photograph Date: July 05, 2007

Vegetation Community Types

1. Juncus balticus/ Carex praegracilis wetland
2. Eleocharis palustris/Polygonum amphibium wetland
3. Upland Floodplain
3A. Transitional Upland Floodplain
4. Salix/Hordeum/Equisetum wetland
5. Hordeum wetland
6. Hillside Upland

Cirsium arvense populations (partially mapped)
Cynoglossum officinale (partially mapped)
Euphorbia esula populations (partially mapped)

Wetland Area 2007

Gross Wetland Area	20.65 Acres
Upland Islands	-0.69 Acres
Net Wetland Area	19.96 Acres

N S E

200' 100' 0 100' 200'
1"=200'

MONITORING AREA LIMITS
INNER OXBOW
MONITORING AREA LIMITS
OUTER OXBOW
NORTHERN EXCAVATED AREA
MONITORING AREA LIMITS

PROJECT NAME
MDT Perry Ranch Wetland Mitigation

DRAWING TITLE
2007 Mapped Site Features

PROJ NO: B43088.305
DRAWN: LL
LOCATION: Perry Ranch
PROJ MGR: J.Bergl und
SCALE: 1"=200'
CHECKED:
APPVD:
FILE NAME: L:\B43054.305PerryRanch\dwg\Perry2007All2.dwg

PBS&J
1120 Cedar
Missoula, MT 59802

FIGURE
3
OF
REV -
Dec/06/2007

Appendix B

2007 WETLAND MITIGATION SITE MONITORING FORM
2007 BIRD SURVEY FORM
2007 COE WETLAND DELINEATION FORMS
2007 FUNCTIONAL ASSESSMENT FORMS

MDT Wetland Mitigation Monitoring
Perry Ranch
Glacier County, Montana

PBS&J / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **Perry Ranch** Project Number: **B43088.00-0410**
Assessment Date: **July 17, 2007** Person(s) conducting the assessment: **A. Pipp**
Location: **Cut Bank Creek** MDT District: **Great Falls** Milepost: _____
Legal Description: T **34N** R **8W** Section **27, 34**
Weather Conditions: **slight overcast, 95 deg., calm wind** Time of Day: **0800-1600**
Initial Evaluation Date: **May 15, 2002** Monitoring Year: **#6-2007** # Visits in Year: **2**
Size of evaluation area: **30 acres** Land use surrounding wetland: **rangeland and Cut Bank Creek**

HYDROLOGY

Surface Water Source: **seasonal flooding via Cut Bank Creek**
Inundation: **Absent** Average Depth: **0.0 feet** Range of Depths: **0 inch**
Percent of assessment area under inundation: **0%**
Depth at emergent vegetation-open water boundary: **0.0 feet**
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.):
cracked soils; deep tire tracks and animal tracks

Groundwater Monitoring Wells: **Absent**
Record depth of water below ground surface (in feet):

Well Number	Depth	Well Number	Depth	Well Number	Depth

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.

COMMENTS / PROBLEMS:
During the May visit the Inlet Channel and Inner Oxbow had a few areas of pooled water, but was mostly void of surface water (as seen on aerial photograph). During the July visit these pools had become dry. In May about 13 cows/calves were grazing within the mitigation site, but were later removed and no damge to plants or structures were observed. At least 10 soil pits were dug throughout the site in 2007 with only 3 pits demonstrating very moist soils. Compared to 2006, soils were drier. The Northern Excavated Area was one of portions with very moist soil, indicating that groundwater may be supplying that moisture.

VEGETATION COMMUNITIES

Community Number: **1** Community Title (main spp): **Juncus balticus / Carex praegracilis**

Dominant Species	% Cover	Dominant Species	% Cover
Juncus balticus	5 = > 50%	Hordeum jubatum	+ = < 1%
Carex praegracilis	5 = > 50%	Agropyron repens	1 = 1-5%
Potentilla anserina	4 = 21-50%	Eleocharis palustris	1 = 1-5%
Artemisia ludoviciana	1 = 1-5%		
Equisetum arvense	3 = 11-20%		
Glycyrrhiza lepidota	1 = 1-5%		

Comments / Problems: **This wetland community is slowly drying out and shrinking. Symphoricarpos occidentalis, Rosa arkansana, Euphorbia esula, Bromus inermis, Poa pratensis, and Cirsium arvense are invading. Area mapped in 2007 is smaller than in 2006 or 2005.**

Community Number: **2** Community Title (main spp): **Eleocharis palustris / Polygonum amphibium**

Dominant Species	% Cover	Dominant Species	% Cover
Eleocharis palustris	2 = 6-10%	Hordeum jubatum	5 = > 50%
Polygonum amphibium	3 = 11-20%	Typha latifolia	+ = < 1%
Alopecurus pratensis	2 = 6-10%	Rumex crispus	2 = 6-10%
Rumex maritimus	2 = 6-10%	Juncus balticus	1 = 1-5%
Phalaris arundinacea	2 = 6-10%	Agropryon trachycaulum	2 = 6-10%
Equisteum arvense	2 = 6-10%	Potentilla anserina	3 = 11-20%

Comments / Problems: **Although soils were drier in 2007 the plant community continues to exhibit a dominance of wetland plants.**

Community Number: **3A** Community Title (main spp): **Transitional Upland Floodplain**

Dominant Species	% Cover	Dominant Species	% Cover
Agropyron trachycaulum	1 = 1-5%	Rumex maritimus	1 = 1-5%
Agropyron intermedium	2 = 6-10%	Hordeum jubatum	5 = > 50%
Agropyron repens	1 = 1-5%	Alopecurus pratensis	3 = 11-20%
Artemisia ludoviciana	1 = 1-5%	Aster pansus	1 = 1-5%
Symphoricarpos occidentalis	1 = 1-5%	Salix exigua	+ = < 1%
Rumex crispus	1 = 1-5%	Poa pratensis	+ = < 1%

Comments / Problems: **This is a transitional upland/wetland. The plant community is dominated with H. jubatum and scattered with upland and wetland plants. Soils again were dry in 2007. However, plants east of the channel were brown and cured while those west of the channel were still green and fruiting.**

VEGETATION COMMUNITIES (continued)

Community Number: **4** Community Title (main spp): **Salix/Hordeum/Equisteum Wetland**

Dominant Species	% Cover	Dominant Species	% Cover
Equisetum arvense	4 = 21-50%	Salix amygdaloides	3 = 11-20%
Hordeum jubatum	4 = 21-50%	Agropyon intermedium	1 = 1-5%
Alopecurus pratensis	2 = 6-10%	Carex praegracilis	1 = 1-5%
Rumex crispus	1 = 1-5%	Eleocharus palustris	1 = 1-5%
Potentilla anserina	3 = 11-20%	Phalaris arundinacea	2 = 6-10%
Salix exigua	4 = 21-50%	Typha latifolia	+ = < 1%

Comments / Problems: **Salix, Equisetum, Potentilla, and Hordeum were prevalent around the excavated ponds. Alopecurus, Phalaris, and S. exigua were prevalent along the inlet channel.**

Community Number: **3** Community Title (main spp): **Upland Floodplain**

Dominant Species	% Cover	Dominant Species	% Cover
Agropyron trachycaulum	3 = 11-20%	Euphorbia esula	4 = 21-50%
Agropyron smithii	3 = 11-20%	Cirsium arvense	4 = 21-50%
Agropyron intermedium	3 = 11-20%	Bromus inermis	2 = 6-10%
Hordeum jubatum	4 = 21-50%	Aster pansus	3 = 11-20%
Rosa arkansas	3 = 11-20%	Bromus inermis	1 = 1-5%
Symphoricarpos occidentalis	4 = 21-50%		

Comments / Problems: **Occupies the flood prone area.**

Community Number: **6** Community Title (main spp): **Hillside Upland**

Dominant Species	% Cover	Dominant Species	% Cover
Stipa viridula	5 = > 50%	Koeleria macranta (K. cristata)	2 = 6-10%
Agropyron smithii	4 = 21-50%	Symphoricarpos occidentale	3 = 11-20%
Agropyron intermedia	4 = 21-50%	Rosa arkansana	3 = 11-20%
Artemisia frigida	3 = 11-20%	Bromus inermis	1 = 1-5%
Grindelia squarrosa	3 = 11-20%	Bouteloua gracilis	2 = 6-10%
Opuntia spp.	2 = 6-10%		

Comments / Problems: **Consists of upland areas on hillsides outside of the floodplain.**

Community Number: **5** Community Title (main spp): **Hordeum jubatum**

Dominant Species	% Cover	Dominant Species	% Cover
Hordeum jubatum	5 = > 50%	Salix lutea	1 = 1-5%
Salix exigua	3 = 11-20%	Cirsium arvense	1 = 1-5%
Rumex maritimus	+ = < 1%	Alopecurus pratensis	+ = < 1%
Rumex crispus	+ = < 1%	Equisetum arvense	+ = < 1%
Lactuca serriola	+ = < 1%		
Thlaspi arvense	+ = < 1%		

Comments / Problems: **Wetland quality present, but marginal.**

Additional Activities Checklist:

☐ Record and map vegetative communities on aerial photograph.

COMPREHENSIVE VEGETATION LIST

Plant Species	Vegetation Community Number (s)	Plant Species	Vegetation Community Number (s)
Achillea millefolium	3, 6	Medicago sativa	3, 6
Agropyron intermedium	1, 3, 4, 5, 6	Melilotus alba	3, 6
Agropyron repens	3	Melilotus officinalis	3, 6
Agropyron smithii	3, 6	Mentha arvensis	3
Agropyron trachycaulum	1, 2, 3, 3A	Opuntia spp.	6
Agrostis alba	2, 3	Phalaris arundinacea	1, 2, 4, 6
Alopecurus pratensis	2, 3, 4, 5	Phleum pratense	3, 6
Amaranthus retroflexus	3, 6	Plantago hirtella	1
Artemisia frigida	6	Plantago major	1, 2
Artemisia ludoviciana	1, 3, 3A	Poa annua	(2), 3, (3A), (4)
Aster (pansus)	3, 6	Poa pratensis	3, 6
Atriplex spp.	3, 6	Polygonum amphibium	1, 2
Bouteloua gracilis	6	Potentilla (gracilis)	1, 3
Brassica kaber	6	Potentilla anserina	1, 2, 3, 4
Bromus inermis	3, 6	Ranunculus cymbalaria	4
Cardaria draba	6	Rosa arkansana	1, 3, 6
Carex lanuginosa	1, 2	Rumex crispus	2, 3, 4, 5
Carex praegracilis	1, 3, 4	Rumex maritimus	2, 3, 3A, 5
Chenopodium album	3, 6	Salix amygdaloides	3, 4
Cirsium arvense (N)	3, 4, 6	Salix exigua	2, 3, 3A, 4, 5
Cynoglossum officinale (N)	border 3/4	Salix lutea	2, 3, 3A, 4, 5
Dactylis glomerata	3	Sisymbium altissimum	3
Descurainia pinnata	3, 6	Smilacina stellata	1
Distichlis spicata	1	Solidago canadensis	1, 3
Eleocharis acicularis	2	Spartina pectinata	1, 2
Eleocharis palustris	1, 2, 3, 4	Stipa viridula	6
Epilobium ciliatum	1	Symphoricarpos occidentalis	1, 3, 6
Equisetum arvense	1, 2, 3, 4	Taraxacum officinale	3, 6
Equisetum hyemale	2	Thlaspi arvense	3, 5, 6
Euphorbia esula (N)	1, 3, 4	Triglochin maritimum	1, 2
Glyceria elata	2	Typha latifolia	2, 4
Glycyrrhiza lepidota	1, 3		
Grindelia squarrosa	3, 6		
Hordeum jubatum	1, 2, 3/3A,4, 5		
Juncus balticus	1		
Kochia scoparia	3		
Koeleria macrantha	6		

Comments / Problems: <u>Parenthesis placed around specific epithets indicates an uncertainty in the species identification. (N) indicates a Montana State Noxious plant.</u>

PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Number Observed	Mortality Causes
N/A			

Comments / Problems: **No species were planted.**

WILDLIFE

Birds

Were man-made nesting structures installed? **No**
If yes, type of structure: _____ How many? _____
Are the nesting structures being used? **NA**
Do the nesting structures need repairs? _____

Mammals and Herptiles

Mammal and Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
White-tailed Deer	0	☒	☐	☐	
Badger	0	☐	☐	☒	
Frogs (unidentified spp.)	0	☐	☐	☐	heard vocals
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Additional Activities Checklist:
No Macroinvertebrate Sampling (if required)

Comments / Problems: May visit: 13 cows/calves were grazing within the site. July visit: Site was dry and could not be sampled for macroinvertebrates.

PHOTOGRAPHS

Using a camera with a 50mm lens and color film 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.

Location	Photograph Frame #	Photograph Description	Compass Reading (°)
		See Photo Sheets	

Comments / Problems: **<u>See Photograph Sheets in Appendix C of the 2007 report.</u>**

GPS SURVEYING

Using a resource grade GPS survey the items on the checklist below. Collect at least 3 location points set at a 5 second recording rate. Record file numbers for site in designated GPS field notebook.

GPS Checklist:

- ☒ Jurisdictional wetland boundary.
- ☒ 4-6 landmarks that are recognizable on the aerial photograph.
- ☒ Start and End points of vegetation transect(s).
- ☒ Photograph reference points.
- ☐ Groundwater monitoring well locations.

Comments / Problems: **Hand-mapping onto the aerial photograph was also used to mark landmarks.**

WETLAND DELINEATION

(attach COE delineation forms)

At each site conduct these checklist items:

- ☒ Delineate wetlands according to the 1987 Army COE manual.
- ☒ Delineate wetland – upland boundary onto aerial photograph.
- **NA** Survey wetland – upland boundary with a resource grade GPS survey.

Comments / Problems: **The GPS unit and hand-mapping onto the aerial photograph were used to delineate wetland boundaries.**

FUNCTIONAL ASSESSMENT

(Complete and attach full MDT Montana Wetland Assessment Method field forms.)
(Also attach any completed abbreviated field forms, if used)

Comments / Problems: _____

MAINTENANCE

Were man-made nesting structure installed at this site? **No**
If yes, do they need to be repaired? **NA**
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? **Yes**
If no, describe the problems below.

Comments / Problems: _____

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Perry Ranch** Date: **July 17, 2007** Examiner: **A. Pipp**
Transect Number: **1** Approximate Transect Length: **532 feet** Compass Direction from Start: **288˚** Note: _____

Vegetation Type A: **Type 3 - Upland Floodplain**	
Length of transect in this type: 0-10 feet	
Plant Species	**Cover**
Hordeum jubatum	+ = < 1%
Kochia scoparia	+ = < 1%
Alopecurus pratensis	3 = 11-20%
Medicago sativa	1 = 1-5%
Agropyron intermedium	3 = 11-20%
Thlaspi arvense	+ = < 1%
Aster pansus	4 = 21-50%
Agropyron trachycaulum	2 = 6-10%
Rumex maritimus	+ = < 1%
Bromus inermis	1 = 1-5%
Total Vegetative Cover:	100%

Vegetation Type B: **Type 2 - Eleocharis palustris / Polygonum amphibium**	
Length of transect in this type: 10-135 feet	
Plant Species	**Cover**
Cirsium arvense	1 = 1-5%
Hordeum jubatum (last yr's stems still identifiable)	+ = < 1%
Alopecurus pratensis	4 = 21-50%
Potentilla anserina	3 = 11-20%
Rumex maritimus	1 = 1-5%
Salix exigua	1 = 1-5%
Equisetum arvense & Juncus balticus EACH	1 = 1-5%
Agropyron trachycaulum	3 = 11-20%
Carex lanuginosa & Glycyrrhiz lepidota EACH	+ = < 1%
Descurainia pinnata & Thlaspi arvense EACH	+ = < 1%
Taraxacum officinale & Chenopodium album EACH	+ = < 1%
Total Vegetative Cover:	100%

Vegetation Type C: **Type 3 - Upland Floodplain**	
Length of transect in this type: 135 - 329 feet	
Plant Species	**Cover**
Agropyron trachycaulum & A. intermedium together	5 = > 50%
Bromus inermis	3 = 11-20%
Hordeum jubatum	3 = 11-20%
Thlaspi arvense	+ = < 1%
Descurainia pinnata	3 = 11-20%
Chenopodium album	+ = < 1%
Phalaris arundinacea	+ = < 1%
Lactuca serriola & Taraxacum officinale EACH	+ = < 1%
Cirsium arvense	2 = 6-10%
Aster pansus	1 = 1-5%
Alopecurus pratensis & Agropyron smithii EACH	1 = 1-5%
Rumex maritimus & Equisetum arvense EACH	+ = < 1%
Total Vegetative Cover:	100%

Vegetation Type D: **Type 3A-Transitional Upland Floodplain**	
Length of transect in this type: 329 - 512 feet	
Plant Species	**Cover**
Hordeum jubatum	5 = > 50%
Agropyron trachycaulum & intermedium	3 = 11-20%
Rumex maritimus	1 = 1-5%
Alopecurus pratensis	4 = 21-50%
Descurainia pinnata	1 = 1-5%
Salix exigua	+ = < 1%
Salix lutea	+ = < 1%
Artemisia ludoviciana	1 = 1-5%
Poa pratensis	1 = 1-5%
Lactuca serriola, Grindelia squarrosa EACH	+ = < 1%
Total Vegetative Cover:	100%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Perry Ranch** Date: **July 17, 2007** Examiner: **A. Pipp**
Transect Number: **1** Approximate Transect Length: **532 feet** Compass Direction from Start: **288˚** Note: _____

Vegetation Type E: **Type 6 - Hillside Upland**	
Length of transect in this type: 512-532 feet	
Plant Species	**Cover**
Kochia scoparia (not observed in 2007)	
Rumex maritimus & R. crispus TOGETHER	1 = 1-5%
Thlaspi arvense	1 = 1-5%
Hordeum jubatum	1 = 1-5%
Salix lutea & S. exigua EACH	+ = < 1%
Mentha arvensis & Descurainia pinnata EACH	1 = 1-5%
Aster pansus	1 = 1-5%
Agropyron smithii	4 = 21-50%
Family Onagraceae	+ = < 1%
Phalaris arundinacea	+ = < 1%
Potentilla anserina	+ = < 1%
Total Vegetative Cover:	100%

Vegetation Type F:	
Length of transect in this type: feet	
Plant Species	**Cover**
Total Vegetative Cover:	%

Vegetation Type G:	
Length of transect in this type: feet	
Plant Species	**Cover**
Total Vegetative Cover:	%

Vegetation Type H:	
Length of transect in this type: feet	
Plant Species	**Cover**
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Cover Estimate		**Indicator Class**	**Source**
+ = < 1%	3 = 11-10%	+ = Obligate	P = Planted
1 = 1-5%	4 = 21-50%	- = Facultative/Wet	V = Volunteer
2 = 6-10%	5 = > 50%	0 = Facultative	

Percent of perimeter developing wetland vegetation (excluding dam/berm structures): **75%**

Establish transects perpendicular to the shoreline (or saturated perimeter). The transect should begin in the upland area. Permanently mark this location with a standard metal fencepost. Extend the imaginary transect line towards the center of the wetland, ending at the 3 foot depth (in open water), or at the point where water depths or saturation are maximized. Mark this location with another metal fencepost.

Estimate cover within a 10 foot wide "belt" along the transect length. At a minimum, establish a transect at the windward and leeward sides of the wetland. Remember that the purpose of this sampling is to monitor, not inventory, representative portions of the wetland site.

Comments: **In general, plant communities appeared more stable and similar to what was found in 2006. Soil conditions were dry in 2007.**

BIRD SURVEY – FIELD DATA SHEET

Site: **Perry Ranch** Date: **5/8/07**
Survey Time: **09:15 am** to **10:30 am**

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Brewer's Blackbird	1	FO	UP	July 17, 2007:			
Western Meadowlark	6	F F L	UP MA	Brewer's Blackbird	2	FO	UP MA
Savannah Sparrow	8	F L N	UP MA	Savannah Sparrow	4	FO L	UP
Gray Partridge	4	L FO	MA	Cliff Swallow	5	F	UP
Red-tailed Hawk	1	FO	UP				
Red-winged Blackbird	1	N	UP				
Killdeer	1	L	MA				
(Vesper) Sparrow	1	L	UP				

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

HABITAT CODES
AB = Aquatic bed
FO = Forested
I = Island
MA = Marsh
MF = Mud Flat
OW = Open Water
SS = Scrub/Shrub
UP = Upland buffer
WM = Wet meadow
US = Unconsolidated shore

Weather: **May 8th: Blue sky with a few thin clouds, 65 degrees, and 20 mph winds. July 17th: Overcast sky from smoke; Dry with one light sprinkling event; Calm winds; and 95 degrees.**

Notes: **May 8th: 13 calf/cows were grazing in site. On Cut Bank Creek saw 6 mallards and 8 Brewer's Blackbirds. In the site heard many frogs, but had no sightings. July 17th: Heard two Mourning Doves outside the site.**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 1

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Emergent
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area? (If needed, explain on the reverse side)	Yes (No)	**Field Location:** In Type 5: In N. Excavated Area

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Hordeum jubatum	Herb	FAC+			
Barley,Fox-Tail					

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 1/1 = 100.00%

FAC Neutral: 0/0 = 0.00%
Numeric Index: 3/1 = 3.00

Remarks:
The Northern Excavated Area is still ringed by Salix exigua and a few Salix lutea. Within the excavated area is a patch of Cirsium arvense and another patch of Alopecurus pratense; otherwise, Hordeum jubatum dominates.

HYDROLOGY

NO Recorded Data(Describe in Remarks):
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	< 12.0 *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- YES Saturated in Upper 12 Inches
- NO Water Marks
- NO Drift Lines
- NO Sediment Deposits
- NO Drainage Patterns in Wetlands

Secondary Indicators
- NO Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- NO FAC-Neutral Test
- NO Other(Explain in Remarks)

Remarks:
Soil was very moist, but not quite saturated from 6-12+ inches within pit. This was the 2nd wettest pit at the mitigation site on July 17, 2007. It is assumed that this area was saturated for a minimum of 12.5% of the growing season or 17 consecutive days.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 1

SOILS

Map Unit Name (Series and Phase): Kiwanis fine sandy loam
Map Symbol: KS **Drainage Class:** well drained
Taxonomy (Subgroup): Mixed Frigid Typic Ustifluvents
Mapped Hydric Inclusion?
Field Observations Confirm Mapped Type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-6	A	2.5Y4/2	N/A	N/A	N/A	Sandy clay loam
6-12+	B	2.5Y4/2	7.5YR4/6	Many	Distinct	Sandy clay loam

Hydric Soil Indicators:

- NO Histosol
- NO Histic Epipedon
- NO Sulfidic Odor
- NO Aquic Moisture Regime
- NO Reducing Conditions
- YES Gleyed or Low Chroma Colors
- NO Concretions
- NO High Organic Content in Surface Layer in Sandy Soils
- NO Organic Streaking in Sandy Soils
- NO Listed on Local Hydric Soils List
- NO Listed on National Hydric Soils List
- NO Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No	Is the Sampling Point within the Wetland? (Yes) No
Wetland Hydrology Present?	(Yes) No	
Hydric Soils Present?	(Yes) No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 2

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Emergent
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area?	Yes (No)	**Field Location:**
(If needed, explain on the reverse side)		In Type 2; Southern end of Inner Oxbow

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Alopecurus pratensis	Herb	FACW	*Salix exigua*	Shrub	OBL
Foxtail,Meadow			Willow,Sandbar		
Eleocharis aciculans	Herb	OBL	*Typha latifolia*	Herb	OBL
Spikerush,Least			Cattail,Broad-Leaf		

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 4/4 = 100.00%	**FAC Neutral:** 4/4 = 100.00% **Numeric Index:** 5/4 = 1.25

Remarks:

HYDROLOGY

NO Recorded Data(Describe in Remarks):
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	= 0.0 *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- YES Saturated in Upper 12 Inches
- NO Water Marks
- NO Drift Lines
- NO Sediment Deposits
- YES Drainage Patterns in Wetlands

Secondary Indicators
- NO Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- YES FAC-Neutral Test
- NO Other(Explain in Remarks)

Remarks:
Pit dug in inlet channel. Surface water was present in May, but was not present on July 17th.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 2

SOILS

Map Unit Name (Series and Phase): Kiwanis fine sandy loam
Map Symbol: KS **Drainage Class:** well drained **Mapped Hydric Inclusion?**
Taxonomy (Subgroup): Mixed Frigid Typic Ustifluvents **Field Observations Confirm Mapped Type?** Yes (No)
Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc
0-4	A	2.5Y4/2	7.5YR4/6	Common Distinct	Silty clay loam
4-12	B	2.5Y4/2	7.5YR4/6	Common Distinct	Sandy clay loam

Hydric Soil Indicators:

NO Histosol	NO Concretions
NO Histic Epipedon	NO High Organic Content in Surface Layer in Sandy Soils
NO Sulfidic Odor	NO Organic Streaking in Sandy Soils
NO Aquic Moisture Regime	NO Listed on Local Hydric Soils List
NO Reducing Conditions	NO Listed on National Hydric Soils List
YES Gleyed or Low Chroma Colors	NO Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No	Is the Sampling Point within the Wetland? (Yes) No
Wetland Hydrology Present?	(Yes) No	
Hydric Soils Present?	(Yes) No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007 **Project No:** B43088
Applicant/Owner: -Montana Department of Transportation-
Investigators: Andrea Pipp

Date: 17-Jul-2007
County: Glacier
State: Montana
Plot ID: 2007-Soil Pit 3

Do Normal Circumstances exist on the site? (Yes) No
Is the site significantly disturbed (Atypical Situation:)? Yes (No)
Is the area a potential Problem Area? Yes (No)
(If needed, explain on the reverse side)

Community ID: Emergent
Transect ID:
Field Location:
In Type 2; Northern end of Inner Oxbow

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Eleocharis palustris	Herb	OBL	*Potentilla anserina*	Herb	OBL
Spikerush,Creeping			Silverweed		
Triglochin maritimum	Herb	OBL	*Phalaris arundinacea*	Herb	FACW
Arrow-Grass,Seaside			Grass,Reed Canary		
Alopecurus pratensis	Herb	FACW			
Foxtail,Meadow					

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 5/5 = 100.00%
FAC Neutral: 5/5 = 100.00%
Numeric Index: 7/5 = 1.40

Remarks:

HYDROLOGY

NO Recorded Data(Describe in Remarks):
N/A Stream, Lake or Tide Gauge
N/A Aerial Photographs
N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water: N/A *(in.)*
Depth to Free Water in Pit: N/A *(in.)*
Depth to Saturated Soil: > 13 *(in.)*

Wetland Hydrology Indicators
Primary Indicators
NO Inundated
NO Saturated in Upper 12 Inches
NO Water Marks
NO Drift Lines
NO Sediment Deposits
YES Drainage Patterns in Wetlands
Secondary Indicators
YES Oxidized Root Channels in Upper 12 Inches
NO Water-Stained Leaves
NO Local Soil Survey Data
YES FAC-Neutral Test
NO Other(Explain in Remarks)

Remarks:
Pit was moist at 4.5 inches, but not saturated or even close to saturated.

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DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007 **Project No:** B43088
Applicant/Owner: -Montana Department of Transportation-
Investigators: Andrea Pipp

Date: 17-Jul-2007
County: Glacier
State: Montana
Plot ID: 2007-Soil Pit 3

SOILS

Map Unit Name (Series and Phase): Kiwanis fine sandy loam
Map Symbol: KS **Drainage Class:** well drained
Taxonomy (Subgroup): Mixed Frigid Typic Ustifluvents
Profile Description

Mapped Hydric Inclusion?
Field Observations Confirm Mapped Type? Yes (No)

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-4.5	A	2.5Y4/1	7.5YR5/6	Common	Distinct	Silty clay loam
4.5-12	B	2.5Y4/1	N/A	N/A	N/A	Clay loam, Decomposed leaves

Hydric Soil Indicators:
NO Histosol
NO Histic Epipedon
NO Sulfidic Odor
NO Aquic Moisture Regime
NO Reducing Conditions
YES Gleyed or Low Chroma Colors
NO Concretions
NO High Organic Content in Surface Layer in Sandy Soils
NO Organic Streaking in Sandy Soils
NO Listed on Local Hydric Soils List
NO Listed on National Hydric Soils List
NO Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

Is the Sampling Point within the Wetland? (Yes) No

Remarks:

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DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 4

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Emergent
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area? (If needed, explain on the reverse side)	Yes (No)	**Field Location:** In Type 1 on southern end of mit. site.

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Juncus balticus	Herb	OBL	*Artemisia ludoviciana*	Herb	UPL
Rush,Baltic			Sagebrush,White		
Equisetum arvense	Herb	FAC	*Achillea millefolium*	Herb	FACU
Horsetail,Field			Yarrow,Common		
Aster pansus	Herb	FAC+	*Glycyrrhiza lepidota*	Herb	FAC+
Aster,Many-Flowered			Licorice,American		

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 4/6 = 66.67%

FAC Neutral: 1/3 = 33.33%

Numeric Index: 19/6 = 3.17

Remarks:
Dug pit where Juncus balticus was the most dense.

HYDROLOGY

NO Recorded Data(Describe in Remarks):
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	> 13 *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- NO Saturated in Upper 12 Inches
- NO Water Marks
- NO Drift Lines
- NO Sediment Deposits
- NO Drainage Patterns in Wetlands

Secondary Indicators
- NO Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- NO FAC-Neutral Test
- NO Other(Explain in Remarks)

Remarks:
Soil was very dry and crumbly from 0-10 inches. Soil had many 0.5 inch to 3.0 inch cobbles.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 4

SOILS

Map Unit Name (Series and Phase): Kiwanis fine sandy loam
Map Symbol: KS **Drainage Class:** well drained
Taxonomy (Subgroup): Mixed Frigid Typic Ustifluvents
Profile Description

Mapped Hydric Inclusion?
Field Observations Confirm Mapped Type? Yes (No)

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-10	A	10YR3/2	N/A	N/A	N/A	Clay loam

Hydric Soil Indicators:
- NO Histosol
- NO Histic Epipedon
- NO Sulfidic Odor
- NO Aquic Moisture Regime
- NO Reducing Conditions
- NO Gleyed or Low Chroma Colors
- NO Concretions
- NO High Organic Content in Surface Layer in Sandy Soils
- NO Organic Streaking in Sandy Soils
- NO Listed on Local Hydric Soils List
- NO Listed on National Hydric Soils List
- NO Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No	Is the Sampling Point within the Wetland? Yes (No)
Wetland Hydrology Present?	Yes (No)	
Hydric Soils Present?	Yes (No)	

Remarks:
Site is upland.

WetForm™

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 5

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Emergent
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area? (If needed, explain on the reverse side)	Yes (No)	**Field Location:** Near Types 1 and 2: South end of project

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Potentilla anserina	Herb	OBL	*Glycyrrhiza lepidota*	Herb	FAC+
Silverweed			Licorice,American		
Juncus balticus	Herb	OBL	*Agropyron smithii*	Herb	FACU
Rush,Baltic			Wheatgrass,Western		

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 3/4 = 75.00%

FAC Neutral: 2/3 = 66.67%
Numeric Index: 9/4 = 2.25

Remarks:
A few Equisetum arvense were present, but not dominant.

HYDROLOGY

NO Recorded Data(Describe in Remarks):
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	> 13 *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- NO Saturated in Upper 12 Inches
- NO Water Marks
- NO Drift Lines
- NO Sediment Deposits
- NO Drainage Patterns in Wetlands

Secondary Indicators
- NO Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- YES FAC-Neutral Test
- NO Other(Explain in Remarks)

Remarks:
Could only dig to 10 inches as soil was very hard, rocky, and dry. Assumption made that it was dry to 12 inches.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 5

SOILS

Map Unit Name (Series and Phase): Kiwanis fine sandy loam
Map Symbol: KS **Drainage Class:** well drained
Taxonomy (Subgroup): Mixed Frigid Typic Ustifluvents
Mapped Hydric Inclusion?
Field Observations Confirm Mapped Type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-10	A	10YR3/2	N/A	N/A	N/A	Sandy clay loam

Hydric Soil Indicators:
- NO Histosol
- NO Histic Epipedon
- NO Sulfidic Odor
- NO Aquic Moisture Regime
- NO Reducing Conditions
- NO Gleyed or Low Chroma Colors
- NO Concretions
- NO High Organic Content in Surface Layer in Sandy Soils
- NO Organic Streaking in Sandy Soils
- NO Listed on Local Hydric Soils List
- NO Listed on National Hydric Soils List
- NO Other (Explain in Remarks)

Remarks:
Soil was very dry and difficult to dig.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No	Is the Sampling Point within the Wetland? Yes (No)
Wetland Hydrology Present?	Yes (No)	
Hydric Soils Present?	Yes (No)	

Remarks:

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DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 6

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Emergent
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area? (If needed, explain on the reverse side)	Yes (No)	**Field Location:** In Type 4; West excavated pond.

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Alopecurus pratensis	Herb	FACW	*Hordeum jubatum*	Herb	FAC+
Foxtail,Meadow			Barley,Fox-Tail		
Equisetum arvense	Herb	FAC	*Salix exigua*	Shrub	OBL
Horsetail,Field			Willow,Sandbar		
Agrostis alba	Herb	FACW			
Redtop					

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 5/5 = 100.00%	**FAC Neutral:** 3/3 = 100.00% **Numeric Index:** 11/5 = 2.20

Remarks:

HYDROLOGY

NO Recorded Data(Describe in Remarks):	**Wetland Hydrology Indicators**
N/A Stream, Lake or Tide Gauge	**Primary Indicators**
N/A Aerial Photographs	NO Inundated
N/A Other	NO Saturated in Upper 12 Inches
YES No Recorded Data	NO Water Marks
	NO Drift Lines
Field Observations	NO Sediment Deposits
Depth of Surface Water: N/A *(in.)*	NO Drainage Patterns in Wetlands
Depth to Free Water in Pit: N/A *(in.)*	**Secondary Indicators**
Depth to Saturated Soil: > 13 *(in.)*	NO Oxidized Root Channels in Upper 12 Inches
	NO Water-Stained Leaves
	NO Local Soil Survey Data
	YES FAC-Neutral Test
	YES Other(Explain in Remarks)

Remarks:
From 0-12 inches the soil was moist, but not saturated. Nearby tire tracks of 6 inches deep and 2 inch cow and deer hoof prints were evident in the soil. Soil surface was cracked 3/4 of an inch deep. About 30 feet away at the lowest elevation of the excavated pond soil was saturated to near the soil surface; this low spot also had surface water in May 2007.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 6

SOILS

Map Unit Name (Series and Phase): Kiwanis fine sandy loam
Map Symbol: KS **Drainage Class:** well drained **Mapped Hydric Inclusion?**
Taxonomy (Subgroup): Mixed Frigid Typic Ustifluvents **Field Observations Confirm Mapped Type?** Yes (No)
Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-3	A	10YR4/1	N/A	N/A	N/A	Clay loam
3-12	B	10YR4/1	7.5YR4/6	Common	Distinct	Clay loam

Hydric Soil Indicators:

NO Histosol	NO Concretions
NO Histic Epipedon	NO High Organic Content in Surface Layer in Sandy Soils
NO Sulfidic Odor	NO Organic Streaking in Sandy Soils
NO Aquic Moisture Regime	NO Listed on Local Hydric Soils List
NO Reducing Conditions	NO Listed on National Hydric Soils List
YES Gleyed or Low Chroma Colors	NO Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No	Is the Sampling Point within the Wetland? (Yes) No
Wetland Hydrology Present?	(Yes) No	
Hydric Soils Present?	(Yes) No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 7

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Emergent
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area? (If needed, explain on the reverse side)	Yes (No)	**Field Location:** About 50 feet from start on T-1.

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Potentilla anserina	Herb	OBL	*Phalaris arundinacea*	Herb	FACW
Silverweed			Grass,Reed Canary		
Equisetum arvense	Herb	FAC	*Agropyron trachycaulum*	Herb	FAC
Horsetail,Field			Wheatgrass,Slender		
Carex lanuginosa	Herb	OBL			
Sedge,Wooly					

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 5/5 = 100.00%

FAC Neutral: 3/3 = 100.00%
Numeric Index: 10/5 = 2.00

Remarks:

HYDROLOGY

NO Recorded Data(Describe in Remarks):
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	> 13 *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- NO Saturated in Upper 12 Inches
- NO Water Marks
- NO Drift Lines
- NO Sediment Deposits
- NO Drainage Patterns in Wetlands

Secondary Indicators
- NO Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- YES FAC-Neutral Test
- NO Other(Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 7

SOILS

Map Unit Name (Series and Phase): Kiwanis fine sandy loam
Map Symbol: KS **Drainage Class:** well drained
Taxonomy (Subgroup): Mixed Frigid Typic Ustifluvents
Mapped Hydric Inclusion?
Field Observations Confirm Mapped Type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-12	A	10YR3/2	N/A	N/A	N/A	Clay loam, Oxidized rhizospheres

Hydric Soil Indicators:

- NO Histosol
- NO Histic Epipedon
- NO Sulfidic Odor
- NO Aquic Moisture Regime
- NO Reducing Conditions
- YES Gleyed or Low Chroma Colors
- NO Concretions
- NO High Organic Content in Surface Layer in Sandy Soils
- NO Organic Streaking in Sandy Soils
- NO Listed on Local Hydric Soils List
- NO Listed on National Hydric Soils List
- NO Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No	Is the Sampling Point within the Wetland? Yes (No)
Wetland Hydrology Present?	Yes (No)	
Hydric Soils Present?	(Yes) No	

Remarks:

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DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007 **Project No:** B43088
Applicant/Owner: -Montana Department of Transportation-
Investigators: Andrea Pipp

Date: 17-Jul-2007
County: Glacier
State: Montana
Plot ID: 2007-Soil Pit 8

Do Normal Circumstances exist on the site? (Yes) No
Is the site significantly disturbed (Atypical Situation:)? Yes (No)
Is the area a potential Problem Area? Yes (No)
(If needed, explain on the reverse side)

Community ID: Emergent
Transect ID:
Field Location:

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Alopecurus pratensis	Herb	FACW	*Rumex maritimus*	Herb	FACW+
Foxtail,Meadow			Dock,Golden		
Hordeum jubatum	Herb	FAC+	*Salix exigua*	Shrub	OBL
Barley,Fox-Tail			Willow,Sandbar		
Salix lutea	Shrub	OBL	*Artemisia ludoviciana*	Herb	UPL
Willow,Yellow			Sagebrush,White		

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 5/6 = 83.33%
FAC Neutral: 4/5 = 80.00%
Numeric Index: 14/6 = 2.33

Remarks:
Euphorbia esula dominant as well.

HYDROLOGY

NO Recorded Data(Describe in Remarks):
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	> 13 *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- NO Saturated in Upper 12 Inches
- NO Water Marks
- NO Drift Lines
- NO Sediment Deposits
- NO Drainage Patterns in Wetlands

Secondary Indicators
- YES Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- YES FAC-Neutral Test
- NO Other(Explain in Remarks)

Remarks:
Could not dig pit deeper than 3 inches - very, very dry and hard packed.

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DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007 **Project No:** B43088
Applicant/Owner: -Montana Department of Transportation-
Investigators: Andrea Pipp

Date: 17-Jul-2007
County: Glacier
State: Montana
Plot ID: 2007-Soil Pit 8

SOILS

Map Unit Name (Series and Phase): Kiwanis fine sandy loam
Map Symbol: KS **Drainage Class:** well drained
Taxonomy (Subgroup): Mixed Frigid Typic Ustifluvents
Mapped Hydric Inclusion?
Field Observations Confirm Mapped Type? Yes (No)
Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-3	A	10YR3/2	N/A	N/A	N/A	Silty clay loam, Oxidized rhizospheres

Hydric Soil Indicators:
- NO Histosol
- NO Histic Epipedon
- NO Sulfidic Odor
- NO Aquic Moisture Regime
- NO Reducing Conditions
- NO Gleyed or Low Chroma Colors
- NO Concretions
- NO High Organic Content in Surface Layer in Sandy Soils
- NO Organic Streaking in Sandy Soils
- NO Listed on Local Hydric Soils List
- NO Listed on National Hydric Soils List
- NO Other (Explain in Remarks)

Remarks:
Could not dig soil any deeper.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? Yes (No)

Is the Sampling Point within the Wetland? Yes (No)

Remarks:

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DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 9

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Emergent
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area? (If needed, explain on the reverse side)	Yes (No)	**Field Location:** 30 feet west of canal

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Hordeum jubatum	Herb	FAC+	*Agropyron trachycaulum*	Herb	FAC
Barley,Fox-Tail			Wheatgrass,Slender		
Alopecurus pratensis	Herb	FACW			
Foxtail,Meadow					

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 3/3 = 100.00%

FAC Neutral: 1/1 = 100.00%
Numeric Index: 8/3 = 2.67

Remarks:

HYDROLOGY

NO Recorded Data(Describe in Remarks):
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	> 13 *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- NO Saturated in Upper 12 Inches
- NO Water Marks
- NO Drift Lines
- NO Sediment Deposits
- NO Drainage Patterns in Wetlands

Secondary Indicators
- NO Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- YES FAC-Neutral Test
- YES Other(Explain in Remarks)

Remarks:
Soil dry, but with slight moisture. Cow prints of 2 inches deep were present.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 9

SOILS

Map Unit Name (Series and Phase): Kiwanis fine sandy loam
Map Symbol: KS **Drainage Class:** well drained **Mapped Hydric Inclusion?**
Taxonomy (Subgroup): Mixed Frigid Typic Ustifluvents **Field Observations Confirm Mapped Type?** Yes (No)
Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-12	A	2.5Y4/1	N/A	N/A	N/A	Sandy clay loam

Hydric Soil Indicators:

NO Histosol	NO Concretions
NO Histic Epipedon	NO High Organic Content in Surface Layer in Sandy Soils
NO Sulfidic Odor	NO Organic Streaking in Sandy Soils
NO Aquic Moisture Regime	NO Listed on Local Hydric Soils List
NO Reducing Conditions	NO Listed on National Hydric Soils List
YES Gleyed or Low Chroma Colors	NO Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No	Is the Sampling Point within the Wetland? Yes (No)
Wetland Hydrology Present?	Yes (No)	
Hydric Soils Present?	(Yes) No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 10

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Emergent
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area? (If needed, explain on the reverse side)	Yes (No)	**Field Location:** Outer Oxbow

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
Hordeum jubatum	Herb	FAC+	*Eleocharis palustris*	Herb	OBL
Barley,Fox-Tail			Spikerush,Creeping		
Equisetum arvense	Herb	FAC			
Horsetail,Field					

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 3/3 = 100.00%

FAC Neutral: 1/1 = 100.00%
Numeric Index: 7/3 = 2.33

Remarks:
Ranunculus cymbalana (OBL) present about 20 feet from pit.

HYDROLOGY

NO **Recorded Data(Describe in Remarks):**
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	> 13 *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- NO Saturated in Upper 12 Inches
- NO Water Marks
- NO Drift Lines
- NO Sediment Deposits
- NO Drainage Patterns in Wetlands

Secondary Indicators
- NO Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- YES FAC-Neutral Test
- YES Other(Explain in Remarks)

Remarks:
Dry soil with a tad bit of moisture. It was probably saturated for at least 12.5% of the growing season earlier in the summer.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 10

SOILS

Map Unit Name (Series and Phase): Kiwanis fine sandy loam
Map Symbol: KS **Drainage Class:** well drained **Mapped Hydric Inclusion?**
Taxonomy (Subgroup): Mixed Frigid Typic Ustifluvents **Field Observations Confirm Mapped Type?** Yes (No)
Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-12	A	2.5Y4/1	N/A	N/A	N/A	Silty clay loam

Hydric Soil Indicators:
- NO Histosol
- NO Histic Epipedon
- NO Sulfidic Odor
- NO Aquic Moisture Regime
- NO Reducing Conditions
- YES Gleyed or Low Chroma Colors
- NO Concretions
- NO High Organic Content in Surface Layer in Sandy Soils
- NO Organic Streaking in Sandy Soils
- NO Listed on Local Hydric Soils List
- NO Listed on National Hydric Soils List
- NO Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No	Is the Sampling Point within the Wetland? (Yes) No
Wetland Hydrology Present?	(Yes) No	
Hydric Soils Present?	(Yes) No	

Remarks:

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DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 11

Do Normal Circumstances exist on the site?	(Yes) No	**Community ID:** Dry Plain
Is the site significantly disturbed (Atypical Situation:)?	Yes (No)	**Transect ID:**
Is the area a potential Problem Area?	Yes (No)	**Field Location:**
(If needed, explain on the reverse side)		

VEGETATION (USFWS Region No. 9)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 0/0 = 0.00%	**FAC Neutral:** 0/0 = 0.00% **Numeric Index:** 0/0 = 0.00

Remarks:

HYDROLOGY

NO **Recorded Data(Describe in Remarks):**
- N/A Stream, Lake or Tide Gauge
- N/A Aerial Photographs
- N/A Other

YES No Recorded Data

Field Observations

Depth of Surface Water:	N/A *(in.)*
Depth to Free Water in Pit:	N/A *(in.)*
Depth to Saturated Soil:	N/A *(in.)*

Wetland Hydrology Indicators

Primary Indicators
- NO Inundated
- NO Saturated in Upper 12 Inches
- NO Water Marks
- NO Drift Lines
- NO Sediment Deposits
- NO Drainage Patterns in Wetlands

Secondary Indicators
- NO Oxidized Root Channels in Upper 12 Inches
- NO Water-Stained Leaves
- NO Local Soil Survey Data
- NO FAC-Neutral Test
- NO Other(Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Perry Ranch Mitigation Site: 2007	**Project No:** B43088	**Date:** 17-Jul-2007
Applicant/Owner: -Montana Department of Transportation-		**County:** Glacier
Investigators: Andrea Pipp		**State:** Montana
		Plot ID: 2007-Soil Pit 11

SOILS

Map Unit Name (Series and Phase):
Map Symbol: **Drainage Class:** **Mapped Hydric Inclusion?**
Taxonomy (Subgroup): **Field Observations Confirm Mapped Type?** Yes (No)
Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc

Hydric Soil Indicators:

NO Histosol	NO Concretions
NO Histic Epipedon	NO High Organic Content in Surface Layer in Sandy Soils
NO Sulfidic Odor	NO Organic Streaking in Sandy Soils
NO Aquic Moisture Regime	NO Listed on Local Hydric Soils List
NO Reducing Conditions	NO Listed on National Hydric Soils List
NO Gleyed or Low Chroma Colors	NO Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes (No)	Is the Sampling Point within the Wetland? Yes (No)
Wetland Hydrology Present?	Yes (No)	
Hydric Soils Present?	Yes (No)	

Remarks:

MDT MONTANA WETLAND ASSESSMENT FORM (revised May 25, 1999)

1. Project Name: Perry Ranch Wetland Mitigation **2. Project #:** NH 0002(232) **Control #:** 0703

3. Evaluation Date: 7/17/2007 **4. Evaluator(s):** A. Pipp **5. Wetland / Site #(s):** Inner Oxbow

6. Wetland Location(s) i. T: 34 N **R:** 8 W **S:** 27, 34 **T:** __ N **R:** __ E **S:** _____

ii. Approx. Stationing / Mileposts: NA

iii. Watershed: --- **GPS Reference No. (if applies):** NA

Other Location Information: Immediately west of Cut Bank Creek ; Between Browning, and Cut Bank, Montana, on the Blackfeet Indian Reservation.

7. A. Evaluating Agency MDT

B. Purpose of Evaluation:

- ☐ Wetlands potentially affected by MDT project
- ☐ Mitigation wetlands; pre-construction
- ☒ Mitigation wetlands; post-construction
- ☐ Other

8. Wetland Size (total acres): _____ (visually estimated)
5.52 (measured, e.g. GPS)

9. Assessment Area (total acres): _____ (visually estimated)
5.76 (measured, e.g. GPS)

Comments: _____

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS [1]	SYSTEM [2]	SUBSYSTEM [2]	CLASS [2]	WATER REGIME [2]	MODIFIER [2]	% OF AA
Riverine	Palustrine	None	Emergent Wetland	Seasonally Flooded	Excavated/Impounded	80
Riverine	Palustrine	None	Unconsolidated Bottom	Seasonally Flooded	Excavated/Impounded	10
Riverine	Palustrine	None	Scrub-Shrub Wetland	Seasonally Flooded	Excavated/Impounded	10
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[1] = Smith et al. 1995. [2] = Cowardin et al. 1979.

Comments: _____

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin)
Common **Comments:** _____

12. GENERAL CONDITION OF AA

i. Regarding Disturbance: (Use matrix below to select appropriate response.)

Conditions Within AA	Predominant Conditions Adjacent (within 500 Feet) To AA		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged or has been subject to minor clearing; contains few roads or buildings.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.
AA occurs and is managed in predominantly a natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings.	---	low disturbance	---
AA not cultivated, but moderately grazed or hayed or selectively logged or has been subject to relatively minor clearing, or fill placement, or hydrological alteration; contains few roads or buildings.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.	---	---	---

Comments: (types of disturbance, intensity, season, etc.) Adjacent land to the east is cultivated and grazed, but not substantially. Adjacent land to the west is cultivated. A native upland buffer (hillslope) separates the project site and the cultivated land to the west.

ii. Prominent weedy, alien, & introduced species: Cirsium arvense, Kochia scoparia, Bromus inermis, Melilotus officinale, M. alba, Euphorbia esula, and Cynoglossum officinale.

iii. Briefly describe AA and surrounding land use / habitat: Wetland area is restored oxbow of and within Cut Bank Creek floodplain;. Adjacent to rangeland and cropland.

13. STRUCTURAL DIVERSITY (Based on 'Class' column of #10 above.)

Number of 'Cowardin' Vegetated Classes Present in AA	≥3 Vegetated Classes or ≥ 2 if one class is forested	2 Vegetated Classes or 1 if forested	≤ 1 Vegetated Class
Select Rating	---	Moderate	---

Comments: _____

14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS AND ANIMALS

i. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat **(list species)**	☐ D	☐ S	_____
Secondary habitat **(list species)**	☐ D	☐ S	_____
Incidental habitat **(list species)**	☐ D	☒ S	Piping Plover
No usable habitat	☐ D	☐ S	_____

ii. Rating (Based on the strongest habitat chosen in 14A(i) above, find the corresponding rating of High (H), Moderate (M), or Low (L) for this function.

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point & Rating	---	---	---	---	---	.3 (L)	---

If documented, list the source (e.g., observations, records, etc.)**:** _____

14B. HABITAT FOR PLANTS AND ANIMALS RATED AS S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM.
Do not include species listed in 14A(i).

i. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat **(list species)**	☐ D	☐ S	_____
Secondary habitat **(list species)**	☒ D	☐ S	Northern Leopard Frog
Incidental habitat **(list species)**	☐ D	☒ S	Bald Eagle
No usable habitat	☐ D	☐ S	_____

ii. Rating: Based on the strongest habitat chosen in 14B(i) above, find the corresponding rating of High (H), Moderate (M), or Low (L) for this function.

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point & Rating	---	---	.7 (M)	---	---	---	---

If documented, list the source (e.g., observations, records, etc.)**:** A Northern Leopard Frog was observed in 'inner oxbow' in 2006 only.

14C. GENERAL WILDLIFE HABITAT RATING

i. Evidence of overall wildlife use in the AA: Check either substantial, moderate, or low.

☐ **Substantial** (based on any of the following)
- ☐ 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

☐ **Low** (based on any of the following)
- ☐ 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 AA

☒ **Moderate** (based on any of the following)
- ☒ 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, select the AA attribute to determine the exceptional (E), high (H), moderate (M), or low (L) rating. Structural diversity is from 13. For class cover to be considered evenly distributed, vegetated classes must be within 20% of each other in terms of their percent composition in the AA (see 10). Duration of Surface Water: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; A= absent.

Structural Diversity (from 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 12)	--	--	--	--	--	--	--	--	--	--	--	--	--	H	--	--	--	--	--	--
Moderate disturbance at AA (see 12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see 12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

iii. Rating: Use 14C(i) and 14C(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L) for this function.

Evidence of Wildlife Use from 14C(i)	**Wildlife Habitat Features Rating** from 14C(ii)			
	☐ **Exceptional**	☒ **High**	☐ **Moderate**	☐ **Low**
Substantial	--	--	--	--
Moderate	--	.7 (M)	--	--
Low	--	--	--	--

Comments: Upland birds and mammals were observed in 2007.

14D. GENERAL FISH / AQUATIC HABITAT RATING ☒ **NA** (proceed to 14E)

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

i. Habitat Quality: Pick the appropriate AA attributes in matrix to determine the quality rating of exceptional (E), high (H), moderate (M), or low (L).

Duration of Surface Water in AA	☐ **Permanent/Perennial**			☐ **Seasonal / Intermittent**			☐ **Temporary / Ephemeral**		
Cover - % of waterbody in AA containing cover objects (*e.g.* submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	**>25%**	**10-25%**	**<10%**	**>25%**	**10-25%**	**<10%**	**>25%**	**10-25%**	**<10%**
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading – 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--

ii. Modified Habitat Quality: Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity **or** is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support**?**
☐ **Y** ☐ **N** If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating: ☐ E ☐ H ☐ M ☐ L

iii. Rating: Use the conclusions from 14D(i) and 14D(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L).

Types of Fish Known or Suspected within AA	**Modified Habitat Quality** from 14D(ii)			
	☐ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **Low**
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: _____

14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14G)

Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA do not flood from in-channel or overbank flow, then check NA.

i. Rating: Working from top to bottom, mark the appropriate attributes to arrive at the functional point and rating of high (H), moderate (M), or low (L) 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 **no outlet or restricted outlet**	--	--	--	--	--	.5 (M)	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--	--

ii. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA? (check)
☐**Y** ☒**N** **Comments:** Floods from Cut Bank Creek.

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)

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, then check NA above.

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.
P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding**.**	☒ **>5 acre feet**			☐ **<5, >1 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**	--	.9 (H)	--	--	--	--	--	--	--
Wetlands in AA flood or pond **< 5 out of 10 years**	--	--	--	--	--	--	--	--	--

Comments: Although the entire inner oxbow may not flood each year, there have been puddles present each July.

14G. SEDIMENT/NUTRIENT/TOXICANT RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)

Applies to wetlands with the potential to receive excess 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 above.

i. Rating Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds 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 has 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 or ponding in AA	☒ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**
AA contains **no or restricted outlet**	1 (H)	--	--	--	--	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--

Comments: Sediment and nutrient inflow from Cut Bank Creek.

14H. SEDIMENT/SHORELINE STABILIZATION ☒ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body that is subject to wave action. If this does not apply, then check NA above.

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating exceptional (E), high (H), moderate (M), or low (L) for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	☐ Permanent / Perennial	☐ Seasonal / Intermittent	☐ Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	--	--	--
< 35 %	--	--	--

Comments: Not applicable at this stage.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function. **A** = acreage of vegetated component in the AA. **B** = structural diversity rating from #13. **C** = Yes (Y) or No (N) as to whether or not the AA contains a surface or subsurface outlet. **P/P** = permanent/perennial; **S/I** = seasonal/intermittent; **T/E/A**= temporary/ephemeral/absent.

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	☐Y	☐N	☐Y	☒N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	.7M	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: _____

14J. GROUNDWATER DISCHARGE / RECHARGE (DR) (Check the indicators in i & ii below that apply to the AA.)

i. ☒ **Discharge Indicators**

- ☐ Springs 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.
- ☒ Other Some alluvial flow likely.

ii. ☐ **Recharge Indicators**

- ☐ Permeable substrate presents without underlying impeding layer.
- ☐ Wetland contains inlet but not outlet.
- ☐ Other _____

iii. Rating: Use information from 14J(i) and 14J(ii) above and the table below to arrive at the functional point and rating of high (H) or low (L) for this function.

Criteria	Functional Point and Rating
AA has known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	--
Available Discharge/Recharge information inadequate to rate AA D/R potential	--

Comments: _____

14K. UNIQUENESS

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

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 from 11	☐rare	☐common	☐abundant	☐rare	☐common	☐abundant	☐rare	☒common	☐abundant
Low disturbance at AA (12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (12i)	--	--	--	--	--	--	--	--	--

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL

i. Is the AA a known recreational or educational site? ☐ **Yes** [**Rate** ☐ **High (1.0)**, then proceed to 14L(ii) only] ☒ **No** [Proceed to 14L(iii)]

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

iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?

☒ **Yes** [Proceed to 14L (ii) and then 14L(iv)] ☐ **No** [Rate as low in 14L(iv)]

iv. Rating Use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Ownership	Disturbance at AA from 12(i)		
	☒ Low	☐ Moderate	☐ High
Public ownership	--	--	--
Private ownership	.7(M)	--	--

Comments: Tribal ownership restricts access.

FUNCTION, VALUE SUMMARY, AND OVERALL RATING

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	low	0.30	1	
B. MT Natural Heritage Program Species Habitat	moderate	0.70	1	
C. General Wildlife Habitat	moderate	0.70	1	
D. General Fish/Aquatic Habitat	N/A		--	
E. Flood Attenuation	moderate	0.50	1	
F. Short and Long Term Surface Water Storage	high	0.90	1	
G. Sediment/Nutrient/Toxicant Removal	high	1.00	1	
H. Sediment/Shoreline Stabilization	N/A		--	
I. Production Export/Food Chain Support	moderate	0.70	1	
J. Groundwater Discharge/Recharge	high	1.00	1	
K. Uniqueness	moderate	0.40	1	
L. Recreation/Education Potential	moderate	0.70	1	
	Total:	**6.90**	**10.00**	____
		Percent of Total Possible Points:	**69%** (Actual / Possible) x 100 [rd to nearest whole #]	

Category I Wetland: (Must satisfy **one** of the following criteria. If not satisfied, proceed to Category II.)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E(ii) is "yes"; **or**
- ☐ Percent of total Possible Points is > 80%.

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following Category II criteria. If not satisfied, proceed 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**
- ☒ Percent of total possible points is > 65%.

☐ **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 not satisfied, return to Category III.)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export / Food Chain Support; **and**
- ☐ Percent of total possible points is < 30%.

OVERALL ANALYSIS AREA (AA) RATING: (Check appropriate category based on the criteria outlined above.)

☐ **I** ☒ **II** ☐ **III** ☐ **IV**

MDT MONTANA WETLAND ASSESSMENT FORM (revised May 25, 1999)

1. Project Name: Perry Ranch Wetland Mitigation **2. Project #:** NH 0002(232) **Control #:** 0703

3. Evaluation Date: 7/17/2007 **4. Evaluator(s):** A. Pipp **5. Wetland / Site #(s):** Outer Oxbow

6. Wetland Location(s) i. T: 34 N **R:** 8 W **S:** 27, 34 **T:** __ N **R:** __ E **S:** _____

ii. Approx. Stationing / Mileposts: NA

iii. Watershed: --- **GPS Reference No. (if applies):** NA

Other Location Information: Immediately west of Cut Bank Creek ; Between Browning and Cut Bank, Montana, on the Blackfeet Indian Reservation.

7. A. Evaluating Agency MDT

B. Purpose of Evaluation:

- ☐ Wetlands potentially affected by MDT project
- ☐ Mitigation wetlands; pre-construction
- ☒ Mitigation wetlands; post-construction
- ☐ Other

8. Wetland Size (total acres): _____ (visually estimated)
7.97 (measured, e.g. GPS)

9. Assessment Area (total acres): _____ (visually estimated)
7.97 (measured, e.g. GPS)

Comments: _____

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS [1]	SYSTEM [2]	SUBSYSTEM [2]	CLASS [2]	WATER REGIME [2]	MODIFIER [2]	% OF AA
Riverine	Palustrine	None	Emergent Wetland	Seasonally Flooded	Excavated/Impounded	100
---	---	---	---	---	---	
---	---	---	---	---	---	
---	---	---	---	---	---	

[1] = Smith et al. 1995. [2] = Cowardin et al. 1979.

Comments: _____

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin)
Common **Comments:** _____

12. GENERAL CONDITION OF AA

i. Regarding Disturbance: (Use matrix below to select appropriate response.)

Conditions Within AA	Predominant Conditions Adjacent (within 500 Feet) To AA		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged or has been subject to minor clearing; contains few roads or buildings.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.
AA occurs and is managed in predominantly a natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings.	---	low disturbance	---
AA not cultivated, but moderately grazed or hayed or selectively logged or has been subject to relatively minor clearing, or fill placement, or hydrological alteration; contains few roads or buildings.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.	---	---	---

Comments: (types of disturbance, intensity, season, etc.) Adjacent land to the west is cultivated. A native upland buffer (hillside) separates the project area and the adjacent land to the west. Adjacent land to the east is cultivated and grazed.

ii. Prominent weedy, alien, & introduced species: Cirsium arvense, Kochia scoparia, Bromus inermis, Melilotus officinale, and M. alba.

iii. Briefly describe AA and surrounding land use / habitat: Wetland area is a restored oxbow of and within Cut Bank Creek floodplain. Adjacent to rangeland and cropland.

13. STRUCTURAL DIVERSITY (Based on 'Class' column of #10 above.)

Number of 'Cowardin' Vegetated Classes Present in AA	≥3 Vegetated Classes or ≥ 2 if one class is forested	2 Vegetated Classes or 1 if forested	≤ 1 Vegetated Class
Select Rating	---	---	Low

Comments: _____

14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS AND ANIMALS

i. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat **(list species)**	☐ D	☐ S	_____
Secondary habitat **(list species)**	☐ D	☐ S	_____
Incidental habitat **(list species)**	☐ D	☒ S	Piping Plover
No usable habitat	☐ D	☐ S	_____

ii. Rating (Based on the strongest habitat chosen in 14A(i) above, find the corresponding rating of High (H), Moderate (M), or Low (L) for this function.

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point & Rating	---	---	---	---	---	.3 (L)	---

If documented, list the source (e.g., observations, records, etc.)**:** _____

14B. HABITAT FOR PLANTS AND ANIMALS RATED AS S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM.
Do not include species listed in 14A(i).

i. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat **(list species)**	☐ D	☐ S	_____
Secondary habitat **(list species)**	☒ D	☐ S	Northern Leopard Frog
Incidental habitat **(list species)**	☐ D	☒ S	Bald Eagle
No usable habitat	☐ D	☐ S	_____

ii. Rating: Based on the strongest habitat chosen in 14B(i) above, find the corresponding rating of High (H), Moderate (M), or Low (L) for this function.

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point & Rating	---	---	.7 (M)	---	---	---	---

If documented, list the source (e.g., observations, records, etc.)**:** A few individual Northern Leopard Frogs have been observed in 'outer oxbow' in 2002 and 2005, but not in 2003, 2004, 2006, or 2007 in the 'outer oxbow'.

14C. GENERAL WILDLIFE HABITAT RATING

i. Evidence of overall wildlife use in the AA: Check either substantial, moderate, or low.

☐ **Substantial** (based on any of the following)
- ☐ 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

☐ **Low** (based on any of the following)
- ☐ 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 AA

☒ **Moderate** (based on any of the following)
- ☒ 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, select the AA attribute to determine the exceptional (E), high (H), moderate (M), or low (L) rating. Structural diversity is from 13. For class cover to be considered evenly distributed, vegetated classes must be within 20% of each other in terms of their percent composition in the AA (see 10). Duration of Surface Water: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; A= absent.

Structural Diversity (from 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 12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	H	--	--
Moderate disturbance at AA (see 12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see 12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

iii. Rating: Use 14C(i) and 14C(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L) for this function.

Evidence of Wildlife Use from 14C(i)	**Wildlife Habitat Features Rating** from 14C(ii)			
	☐ **Exceptional**	☒ **High**	☐ **Moderate**	☐ **Low**
Substantial	--	--	--	--
Moderate	--	.7 (M)	--	--
Low	--	--	--	--

Comments: Scattered mammal and birds observed in 2007.

14D. GENERAL FISH / AQUATIC HABITAT RATING ☒ **NA** (proceed to 14E)

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

i. Habitat Quality: Pick the appropriate AA attributes in matrix to determine the quality rating of exceptional (E), high (H), moderate (M), or low (L).

Duration of Surface Water in AA	☐ **Permanent/Perennial**			☐ **Seasonal / Intermittent**			☐ **Temporary / Ephemeral**		
Cover - % of waterbody in AA containing cover objects (*e.g.* submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	**>25%**	**10-25%**	**<10%**	**>25%**	**10-25%**	**<10%**	**>25%**	**10-25%**	**<10%**
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading – 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--

ii. Modified Habitat Quality: Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity **or** is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support**?**
☐ **Y** ☐ **N** If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating: ☐ E ☐ H ☐ M ☐ L

iii. Rating: Use the conclusions from 14D(i) and 14D(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L).

Types of Fish Known or Suspected within AA	**Modified Habitat Quality** from 14D(ii)			
	☐ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **Low**
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: _____

14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14G)

Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA do not flood from in-channel or overbank flow, then check NA.

i. Rating: Working from top to bottom, mark the appropriate attributes to arrive at the functional point and rating of high (H), moderate (M), or low (L) 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 **no outlet or restricted outlet**	--	--	--	--	--	.5 (M)	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--	--

ii. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA? (check)
☐**Y** ☒**N** **Comments:** Floods from Cut Bank Creek.

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)

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, then check NA above.

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.
P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding**.**	☒ **>5 acre feet**			☐ **<5, >1 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**	--	.9 (H)	--	--	--	--	--	--	--
Wetlands in AA flood or pond **< 5 out of 10 years**	--	--	--	--	--	--	--	--	--

Comments: _____

14G. SEDIMENT/NUTRIENT/TOXICANT RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)

Applies to wetlands with the potential to receive excess 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 above.

i. Rating Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds 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 has 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 or ponding in AA	☒ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**
AA contains **no or restricted outlet**	1 (H)	--	--	--	--	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--

Comments: Sediment and nutrient inflow from Cut Bank Creek.

14H. SEDIMENT/SHORELINE STABILIZATION ☒ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body that is subject to wave action. If this does not apply, then check NA above.

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating exceptional (E), high (H), moderate (M), or low (L) for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	☐ Permanent / Perennial	☐ Seasonal / Intermittent	☐ Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	--	--	--
< 35 %	--	--	--

Comments: Not applicable at this stage.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function. **A** = acreage of vegetated component in the AA. **B** = structural diversity rating from #13. **C** = Yes (Y) or No (N) as to whether or not the AA contains a surface or subsurface outlet. **P/P** = permanent/perennial; **S/I** = seasonal/intermittent; **T/E/A**= temporary/ephemeral/absent.

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	☐Y	☐N	☐Y	☐N	☐Y	☒N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	.6M	--	--	--	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: 'Outlet' is exit over dike spillway.

14J. GROUNDWATER DISCHARGE / RECHARGE (DR) (Check the indicators in i & ii below that apply to the AA.)

i. ☒ **Discharge Indicators**

- ☐ Springs 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.
- ☒ Other Some alluvial flow likely.

ii. ☐ **Recharge Indicators**

- ☐ Permeable substrate presents without underlying impeding layer.
- ☐ Wetland contains inlet but not outlet.
- ☐ Other _____

iii. Rating: Use information from 14J(i) and 14J(ii) above and the table below to arrive at the functional point and rating of high (H) or low (L) for this function.

Criteria	Functional Point and Rating
AA has known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	--
Available Discharge/Recharge information inadequate to rate AA D/R potential	--

Comments: _____

14K. UNIQUENESS

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

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 from 11	☐rare	☐common	☐abundant	☐rare	☐common	☐abundant	☐rare	☒common	☐abundant
Low disturbance at AA (12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (12i)	--	--	--	--	--	--	--	--	--

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL

i. Is the AA a known recreational or educational site? ☐ **Yes** [**Rate** ☐ **High (1.0)**, then proceed to 14L(ii) only] ☒ **No** [Proceed to 14L(iii)]

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

iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?

☒ **Yes** [Proceed to 14L (ii) and then 14L(iv)] ☐ **No** [Rate as low in 14L(iv)]

iv. Rating Use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Ownership	Disturbance at AA from 12(i)		
	☒ Low	☐ Moderate	☐ High
Public ownership	--	--	--
Private ownership	.7(M)	--	--

Comments: Tribal ownership restricts access.

FUNCTION, VALUE SUMMARY, AND OVERALL RATING

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	low	0.30	1	
B. MT Natural Heritage Program Species Habitat	moderate	0.70	1	
C. General Wildlife Habitat	moderate	0.70	1	
D. General Fish/Aquatic Habitat	N/A		--	
E. Flood Attenuation	moderate	0.50	1	
F. Short and Long Term Surface Water Storage	high	0.90	1	
G. Sediment/Nutrient/Toxicant Removal	high	1.00	1	
H. Sediment/Shoreline Stabilization	N/A		--	
I. Production Export/Food Chain Support	moderate	0.60	1	
J. Groundwater Discharge/Recharge	high	1.00	1	
K. Uniqueness	moderate	0.40	1	
L. Recreation/Education Potential	moderate	0.70	1	
	Total:	**6.80**	**10.00**	____
		Percent of Total Possible Points:	**68%** (Actual / Possible) x 100 [rd to nearest whole #]	

Category I Wetland: (Must satisfy **one** of the following criteria. If not satisfied, proceed to Category II.)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E(ii) is "yes"; **or**
- ☐ Percent of total Possible Points is > 80%.

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following Category II criteria. If not satisfied, proceed 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**
- ☒ Percent of total possible points is > 65%.

☐ **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 not satisfied, return to Category III.)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export / Food Chain Support; **and**
- ☐ Percent of total possible points is < 30%.

OVERALL ANALYSIS AREA (AA) RATING: (Check appropriate category based on the criteria outlined above.)

☐ **I** ☒ **II** ☐ **III** ☐ **IV**

MDT MONTANA WETLAND ASSESSMENT FORM (revised May 25, 1999)

1. Project Name: Perry Ranch Wetland Mitigation **2. Project #:** NH 0002(232) **Control #:** 0703

3. Evaluation Date: 7/17/2007 **4. Evaluator(s):** A. Pipp **5. Wetland / Site #(s):** Northern Excavated Area

6. Wetland Location(s) i. T: 34 N **R:** 8 W **S:** 27 **T:** __ N **R:** __ E **S:** _____

ii. Approx. Stationing / Mileposts: NA

iii. Watershed: --- **GPS Reference No. (if applies):** NA

Other Location Information: Immediately west of Cut Bank Creek ; Between Browning and Cut Bank, Montana, on the Blackfeet Indian Reservation.

7. A. Evaluating Agency MDT

B. Purpose of Evaluation:

- ☐ Wetlands potentially affected by MDT project
- ☐ Mitigation wetlands; pre-construction
- ☒ Mitigation wetlands; post-construction
- ☐ Other

8. Wetland Size (total acres): _____ (visually estimated)
6.47 (measured, e.g. GPS)

9. Assessment Area (total acres): _____ (visually estimated)
6.92 (measured, e.g. GPS)

Comments: _____

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS [1]	SYSTEM [2]	SUBSYSTEM [2]	CLASS [2]	WATER REGIME [2]	MODIFIER [2]	% OF AA
Riverine	Palustrine	None	Emergent Wetland	Seasonally Flooded	Excavated/Impounded	90
Riverine	Palustrine	None	Scrub-Shrub Wetland	Seasonally Flooded	Excavated/Impounded	10
---	---	---	---	---	---	
---	---	---	---	---	---	

[1] = Smith et al. 1995. [2] = Cowardin et al. 1979.

Comments: _____

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin)
Common **Comments:** _____

12. GENERAL CONDITION OF AA

i. Regarding Disturbance: (Use matrix below to select appropriate response.)

Conditions Within AA	Predominant Conditions Adjacent (within 500 Feet) To AA		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged or has been subject to minor clearing; contains few roads or buildings.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.
AA occurs and is managed in predominantly a natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings.	---	low disturbance	---
AA not cultivated, but moderately grazed or hayed or selectively logged or has been subject to relatively minor clearing, or fill placement, or hydrological alteration; contains few roads or buildings.	---	---	---
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.	---	---	---

Comments: (types of disturbance, intensity, season, etc.) Adjacent land to the west is not cultivated. Adjacent land to the east is cultivated and grazed, but not substantially.

ii. Prominent weedy, alien, & introduced species: Cirsium arvense, Kochia scoparia, Melilotus officinale, M. alba, and Thlaspi arvense.

iii. Briefly describe AA and surrounding land use / habitat: Wetland area is within Cut Bank Creek floodplain. Adjacent to rangeland and cropland.

13. STRUCTURAL DIVERSITY (Based on 'Class' column of #10 above.)

Number of 'Cowardin' Vegetated Classes Present in AA	≥3 Vegetated Classes or ≥ 2 if one class is forested	2 Vegetated Classes or 1 if forested	≤ 1 Vegetated Class
Select Rating	---	Moderate	---

Comments: _____

14A. HABITAT FOR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED PLANTS AND ANIMALS

i. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat **(list species)**	☐ D	☐ S	_____
Secondary habitat **(list species)**	☐ D	☐ S	_____
Incidental habitat **(list species)**	☐ D	☒ S	Piping Plover
No usable habitat	☐ D	☐ S	_____

ii. Rating (Based on the strongest habitat chosen in 14A(i) above, find the corresponding rating of High (H), Moderate (M), or Low (L) for this function.

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point & Rating	---	---	---	---	---	.3 (L)	---

If documented, list the source (e.g., observations, records, etc.)**:** _____

14B. HABITAT FOR PLANTS AND ANIMALS RATED AS S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM.
Do not include species listed in 14A(i).

i. AA is Documented (D) or Suspected (S) to contain (check box):

Primary or Critical habitat **(list species)**	☐ D	☐ S	_____
Secondary habitat **(list species)**	☐ D	☒ S	Northern Leopard Frog
Incidental habitat **(list species)**	☐ D	☒ S	Bald Eagle
No usable habitat	☐ D	☐ S	_____

ii. Rating: Based on the strongest habitat chosen in 14B(i) above, find the corresponding rating of High (H), Moderate (M), or Low (L) for this function.

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point & Rating	---	---	---	.6 (M)	---	---	---

If documented, list the source (e.g., observations, records, etc.)**:** Suspected to provide habitat for Northern Leopard Frogs as they have been found in the adjacent outer and/or inner oxbows during 2002, 2005, and 2006.

14C. GENERAL WILDLIFE HABITAT RATING

i. Evidence of overall wildlife use in the AA: Check either substantial, moderate, or low.

☐ **Substantial** (based on any of the following)
- ☐ 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

☐ **Moderate** (based on any of the following)
- ☐ 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

☒ **Low** (based on any of the following)
- ☒ 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 AA

ii. Wildlife Habitat Features: Working from top to bottom, select the AA attribute to determine the exceptional (E), high (H), moderate (M), or low (L) rating. Structural diversity is from 13. For class cover to be considered evenly distributed, vegetated classes must be within 20% of each other in terms of their percent composition in the AA (see 10). Duration of Surface Water: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; A= absent.

Structural Diversity (from 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 12)	--	--	--	--	--	--	--	--	--	--	--	--	--	H	--	--	--	--	--	--
Moderate disturbance at AA (see 12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see 12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

iii. Rating: Use 14C(i) and 14C(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L) for this function.

Evidence of Wildlife Use from 14C(i)	**Wildlife Habitat Features Rating** from 14C(ii)			
	☐ **Exceptional**	☒ **High**	☐ **Moderate**	☐ **Low**
Substantial	--	--	--	--
Moderate	--	--	--	--
Low	--	.4 (M)	--	--

Comments: A few upland birds are always present, but most wildlife observations occur in the inner and outer oxbows and along Cutbank Creek.

14D. GENERAL FISH / AQUATIC HABITAT RATING ☒ **NA** (proceed to 14E)

If the AA is not or was not historically used by fish due to lack of habitat or excessive gradient, then check the NA box above.

Assess if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [*e.g.* fish use is precluded by perched culvert or other barrier, etc.]. If fish use occurs in the AA but is not desired from a resource management perspective (*e.g.* fish use within an irrigation canal], then Habitat Quality [14D(i)] below should be marked as "Low", applied accordingly in 14D(ii) below, and noted in the comments.

i. Habitat Quality: Pick the appropriate AA attributes in matrix to determine the quality rating of exceptional (E), high (H), moderate (M), or low (L).

Duration of Surface Water in AA	☐ **Permanent/Perennial**			☐ **Seasonal / Intermittent**			☐ **Temporary / Ephemeral**		
Cover - % of waterbody in AA containing cover objects (*e.g.* submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	**>25%**	**10-25%**	**<10%**	**>25%**	**10-25%**	**<10%**	**>25%**	**10-25%**	**<10%**
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading – 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--

ii. Modified Habitat Quality: Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity **or** is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support**?**
☐ **Y** ☐ **N** If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating: ☐ E ☐ H ☐ M ☐ L

iii. Rating: Use the conclusions from 14D(i) and 14D(ii) above and the matrix below to arrive at the functional point and rating of exceptional (E), high (H), moderate (M), or low (L).

Types of Fish Known or Suspected within AA	**Modified Habitat Quality** from 14D(ii)			
	☐ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **Low**
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: _____

14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14G)

Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA do not flood from in-channel or overbank flow, then check NA.

i. Rating: Working from top to bottom, mark the appropriate attributes to arrive at the functional point and rating of high (H), moderate (M), or low (L) 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 **no outlet or restricted outlet**	--	--	--	--	--	.5 (M)	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--	--

ii. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA? (check)
☐**Y** ☒**N** **Comments:** Floods from Cut Bank Creek.

14F. SHORT AND LONG TERM SURFACE WATER STORAGE ☐ **NA** (proceed to 14G)

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, then check NA above.

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.
P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding**.**	☒ **>5 acre feet**			☐ **<5, >1 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**	--	.9 (H)	--	--	--	--	--	--	--
Wetlands in AA flood or pond **< 5 out of 10 years**	--	--	--	--	--	--	--	--	--

Comments: Between 2001 and 2007 the Northern Excavated Area flooded in 2002, 2003, and 2005. Area may pond for short durations after heavy precipitation events.

14G. SEDIMENT/NUTRIENT/TOXICANT RETENTION AND REMOVAL ☐ **NA** (proceed to 14H)

Applies to wetlands with the potential to receive excess 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 above.

i. Rating Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds 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 has 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 or ponding in AA	☒ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**
AA contains **no or restricted outlet**	1 (H)	--	--	--	--	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--

Comments: Sediment and nutrient inflow from Cut Bank Creek.

14H. SEDIMENT/SHORELINE STABILIZATION ☒ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body that is subject to wave action. If this does not apply, then check NA above.

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating exceptional (E), high (H), moderate (M), or low (L) for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	☐ Permanent / Perennial	☐ Seasonal / Intermittent	☐ Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	--	--	--
< 35 %	--	--	--

Comments: Not applicable at this stage.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function. **A** = acreage of vegetated component in the AA. **B** = structural diversity rating from #13. **C** = Yes (Y) or No (N) as to whether or not the AA contains a surface or subsurface outlet. **P/P** = permanent/perennial; **S/I** = seasonal/intermittent; **T/E/A**= temporary/ephemeral/absent.

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	☐Y	☐N	☐Y	☒N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	.7M	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments: _____

14J. GROUNDWATER DISCHARGE / RECHARGE (DR) (Check the indicators in i & ii below that apply to the AA.)

i. ☒ **Discharge Indicators**

- ☐ Springs 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.
- ☒ Other Some alluvial flow likely.

ii. ☐ **Recharge Indicators**

- ☐ Permeable substrate presents without underlying impeding layer.
- ☐ Wetland contains inlet but not outlet.
- ☐ Other _____

iii. Rating: Use information from 14J(i) and 14J(ii) above and the table below to arrive at the functional point and rating of high (H) or low (L) for this function.

Criteria	Functional Point and Rating
AA has known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	--
Available Discharge/Recharge information inadequate to rate AA D/R potential	--

Comments: _____

14K. UNIQUENESS

i. Rating: Working from top to bottom, use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

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 from 11	☐rare	☐common	☐abundant	☐rare	☐common	☐abundant	☐rare	☒common	☐abundant
Low disturbance at AA (12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (12i)	--	--	--	--	--	--	--	--	--

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL

i. Is the AA a known recreational or educational site? ☐ **Yes** [**Rate** ☐ **High (1.0)**, then proceed to 14L(ii) only] ☒ **No** [Proceed to 14L(iii)]

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

iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?

☒ **Yes** [Proceed to 14L (ii) and then 14L(iv)] ☐ **No** [Rate as low in 14L(iv)]

iv. Rating Use the matrix below to arrive at the functional point and rating of high (H), moderate (M), or low (L) for this function.

Ownership	Disturbance at AA from 12(i)		
	☒ Low	☐ Moderate	☐ High
Public ownership	--	--	--
Private ownership	.7(M)	--	--

Comments: Tribal ownership restricts access.

FUNCTION, VALUE SUMMARY, AND OVERALL RATING

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	low	0.30	1	
B. MT Natural Heritage Program Species Habitat	moderate	0.60	1	
C. General Wildlife Habitat	moderate	0.40	1	
D. General Fish/Aquatic Habitat	N/A		--	
E. Flood Attenuation	moderate	0.50	1	
F. Short and Long Term Surface Water Storage	high	0.90	1	
G. Sediment/Nutrient/Toxicant Removal	high	1.00	1	
H. Sediment/Shoreline Stabilization	N/A		--	
I. Production Export/Food Chain Support	moderate	0.70	1	
J. Groundwater Discharge/Recharge	high	1.00	1	
K. Uniqueness	moderate	0.40	1	
L. Recreation/Education Potential	moderate	0.70	1	
	Total:	**6.50**	**10.00**	____
		Percent of Total Possible Points:	**65%** (Actual / Possible) x 100 [rd to nearest whole #]	

Category I Wetland: (Must satisfy **one** of the following criteria. If not satisfied, proceed to Category II.)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E(ii) is "yes"; **or**
- ☐ Percent of total Possible Points is > 80%.

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following Category II criteria. If not satisfied, proceed 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**
- ☐ Percent of total possible points is > 65%.

☒ **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 not satisfied, return to Category III.)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export / Food Chain Support; **and**
- ☐ Percent of total possible points is < 30%.

OVERALL ANALYSIS AREA (AA) RATING: (Check appropriate category based on the criteria outlined above.)

☐ **I** ☐ **II** ☒ **III** ☐ **IV**

Appendix C

2007 REPRESENTATIVE PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
Perry Ranch
Glacier County, Montana

PERRY RANCH WETLAND MITIGATION SITE 2007

Photo Point 1: Panoramic view of northern-most excavated area on July 17, 2007. Photo was taken facing south from the adjacent hillside on the north.

Photo Point 2: Panoramic view of "outer" (photo left) and "inner" (photo right) oxbows on July 17, 2007. Photo was taken facing northeast to southeast from the adjacent hillside on the west.

Photo Point 3: Panoramic view of the southwestern end of the site on July 17, 2007. Delivery ditch is in the foreground. Cut Bank Creek is on photo right. Photo was taken facing northeast from the adjacent hillside on the southwest. Light yellow-green patches are of leafy spurge plants.

PERRY RANCH WETLAND MITIGATION SITE 2007

Photo 4: View is south at Soil Pit 4. Soil pit dug on delineation boundary. Wetland is being invaded by upland species of snowberry and prairie sage.

Photo 5: View is south at Soil Pit 6 in the western excavated pit of the Inner Oxbow. Meadow foxtail, horsetail, and sandbar willow whips dominate.

Photo 6: At east end of dike facing inner oxbow (Type 2 Wetland). View is west.

Photo 7: Soil Pit 3 in Type 2 Wetland of Inner Oxbow. View is north.

Photo 8: View is west at Soil Pit 10 in Outer Oxbow.

Photo 9: View is northwest at Soil Pit 1 in Northern Excavated Area.

PERRY RANCH WETLAND MITIGATION SITE 2007

Photo 10: From start of Transect 1 at 288˚.

Photo 11: From end of Transect 1 at 108˚.

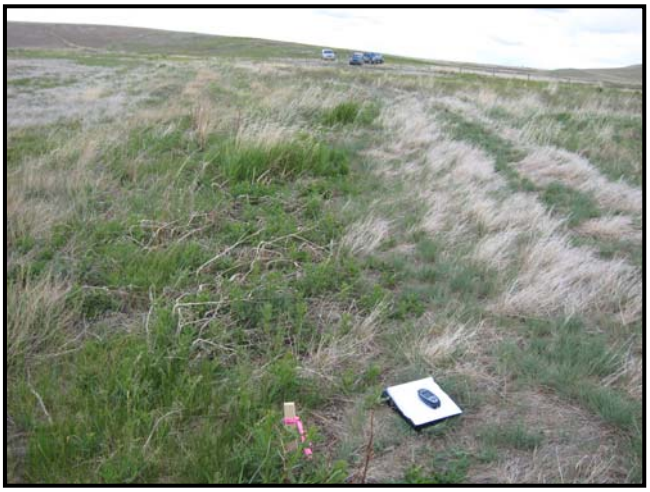


Photo 12: Weed Photo Point 1 on June 18, 2007. View is northeast of emerging Canada thistle.

Photo 13: Weed Photo Point 1 on August 21, 2007. View is northeast of seeded Canada thistle, prior to release of a bio-control weevil.

Photo 14: Weed Photo Point 2 on June 18, 2007. View is east showing leafy spurge (white arrows).

Photo 15: Weed Photo Point 2 on August 21, 2007. View is east showing leafy spurge (white arrows).

PERRY RANCH WETLAND MITIGATION SITE 2007

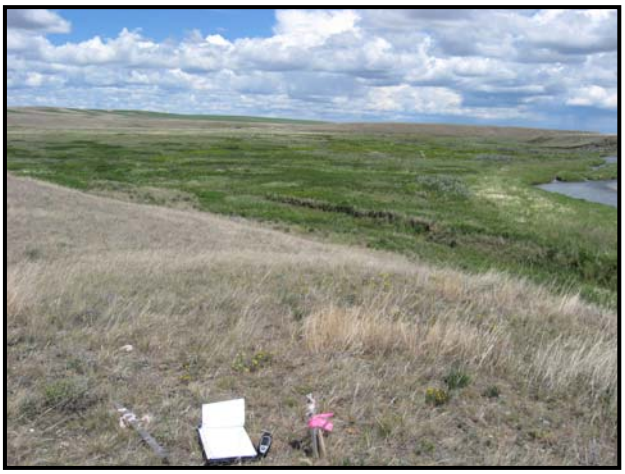


Photo 16: Weed Photo Point 3 / Photo Point 3 on June 18, 2007. View is northeast of the Perry Mitigation Site.

Phot1o 17: Weed Photo Point 3 / Photo Point 3 on August 21, 2007. View is northeast and showing a large leafy spurge infestation.

Photo 18: Weed Photo Point 4 on June 18, 2007. View is south showing the leafy spurge (yellow-green) infestation.

Photo 19: Near Weed Photo Point 4 on August 21, 2007. View is south showing (yellow-green) leafy spurge in fruit.

Photo 20: A leafy spurge plant on August 21, 2007. The purple arrow shows a fertile fruit. The blue arrow shows infertile fruits. This plant had mostly infertile fruits which may be caused by the Leafy Spurge Flea Beetles which were released in July.

Appendix D

MDT Proposed Project Layout

MDT Wetland Mitigation Monitoring
Perry Ranch
Glacier County, Montana

LAND & WATER D-1

MONTANA DEPARTMENT OF TRANSPORTATION

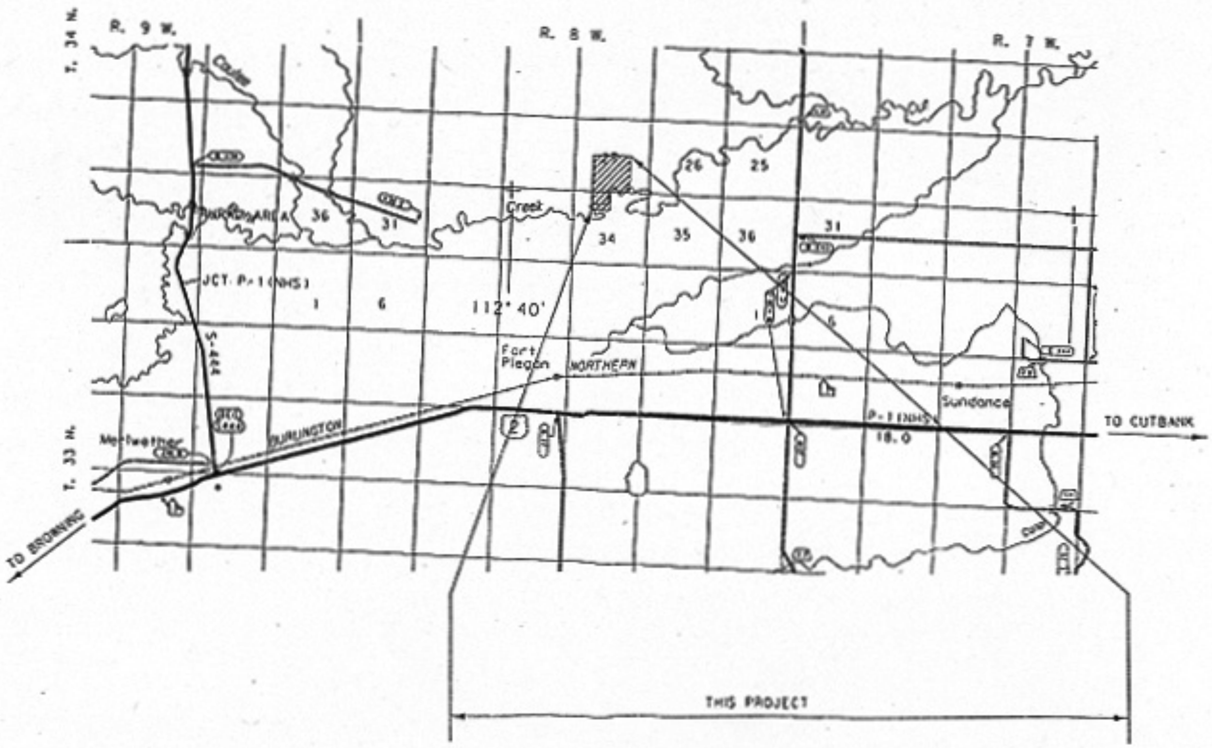
FEDERAL AID PROJECT NO. NH 0002(232)
WETLAND MITIGATION
PERRY RANCH
GLACIER COUNTY

DESIGN DATA
A.D.T. =
A.D.T. =
D.H.V. =
D. =
T. =
V. =
ALL TRUCKS =
ESAL'S =
GROWTH RATE =

LETTING DATE = ______

LENGTH **kilometers**

SCALES
VERTICAL: 1 :
HORIZONTAL: 1 :
CROSS SECTION - HORIZONTAL & VERTICAL: 1 :
REDUCED PRINTS APPROXIMATELY 1/2 ORIGINAL SCALE



PRELIMINARY
FOR PLAN IN HAND ONLY

RELATED PROJECTS

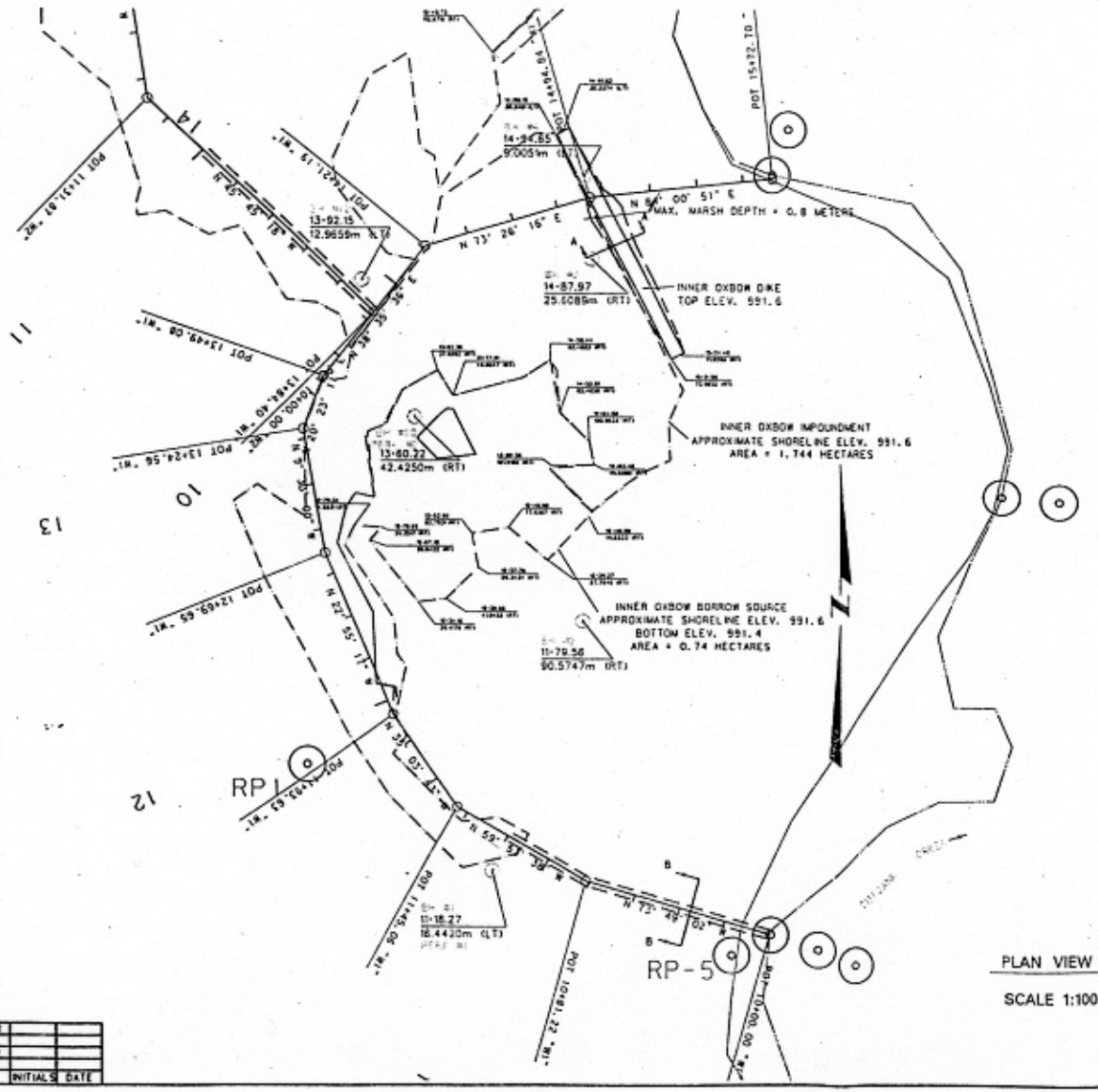
ASSOCIATED PROJECT AGREEMENT NUMBERS	
R/W & I.C.	
P.E.	

CONTROL NO.

MONTANA DEPARTMENT OF TRANSPORTATION
APPROVED : ______
DIRECTOR OF TRANSPORTATION
BY ______
ADMINISTRATOR HIGHWAY DIVISION - ENGINEERING
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED :
______ DIVISION ADMINISTRATOR ______ DATE

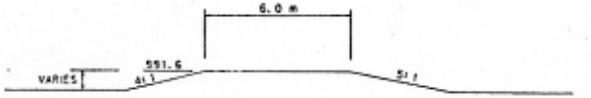
STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 0002(232)	6

INNER OXBOW LAYOUT



PLAN VIEW

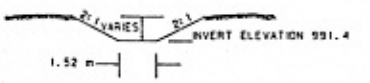
SCALE 1:100



SECTION A-A-SPREDER DIKE TYPICAL SECTION

SCALE 1:10

STA. 10+00 TO STA. 11+20



SECTION B-B-INTAKE WEIR TYPICAL SECTION

SCALE 1:10

DESIGNER		
DRAWN		
CHECKED		
REVISED		
	INITIALS	DATE

INNER OXBOW

LAYOUT DETAIL

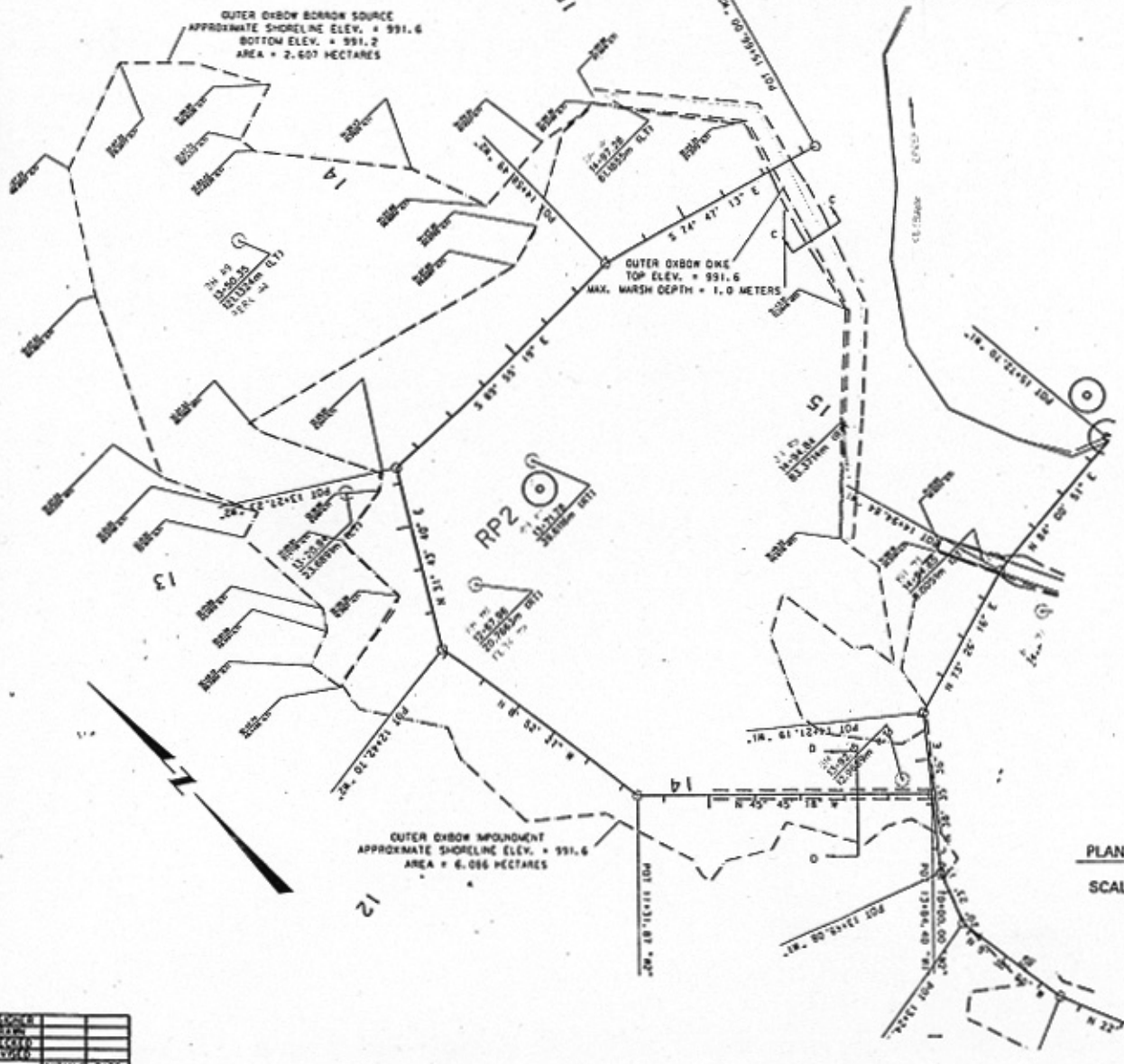
ALIGNMENT "W1"

PRELIMINARY

LAND & WATER D-3

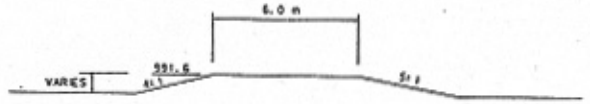
OUTER OXBOW LAYOUT

STATE	PROJECT NUMBER	SHEET
MONTANA	NH 0002(232)	7



PLAN VIEW

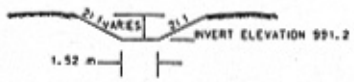
SCALE 1:100



SECTION C-C-SPREDER DIKE TYPICAL SECTION

SCALE 1:10

STA. 10+00 TO STA. 11+00



SECTION D-D-INTAKE WEIR TYPICAL SECTION

SCALE 1:10

DESIGNED		
DRAWN		
CHECKED		
RECOMMD		
	INITIALS	DATE

OUTER OXBOW
LAYOUT DETAIL
ALIGNMENT "W2"

PRELIMINARY

Appendix E

BIRD SURVEY PROTOCOL
GPS PROTOCOL

MDT Wetland Mitigation Monitoring
Perry Ranch
Glacier County, Montana

BIRD SURVEY PROTOCOL

This protocol was developed by the Montana Department of Transportation (MDT) to monitor bird use within their Wetland Mitigation Sites. Though each wetland mitigation site is vastly different, the bird survey data collection methods were standardized to order to increase repeatability. The protocol uses an "area search within a restricted time frame" to collect data on bird species, density, behavior, and habitat-type use.

Survey Area

Sites that can be entirely walked: Sites where the entire perimeter or area can be walked include, but are not limited to: small ponds, enhanced historic river channels, and wet meadows. If the wetland is not uncomfortably inundated, walk several meandering transects to sufficiently cover the wetland. Meandering transects can be used, even if a small portion of the area is inaccessible (e.g. cannot cross due to inundation). Use binoculars to identify the bird species, to count the number of individuals, and to identify their behavior and habitat type. Data can be recorded directly onto the bird survey form or into a field notebook. The number of meandering transects and their direction (or location) should be recorded in the field notebook and/or drawn onto the aerial photograph or topographic map. Meandering transects are not formal and should not be staked. Each site should be walked and surveyed to the fullest extent within the set time limit.

Sites than cannot be entirely walked: Sites where the entire perimeter or area cannot be walked include, but are not limited to: very large sites (i.e. perimeter of 2-3 miles), and large-bodied waters (i.e. reservoirs), where deep water habitat (> 6 feet) is close to shore. For large-bodied waters where only one area was graded to create or enhance the development of wetland, bird surveys should be walked along meandering transects within or around the graded area (see above.). For sites that cannot be walked, bird surveys should be conducted from many lookout posts, established at key vantage points. The general location of lookout posts should be recorded in the field notebook or drawn onto the aerial photograph or topographic map. Lookout post locations do not need to be staked. Both binoculars and spotting scopes may be used in order to accurately identify and count the birds. Depending upon the size of the open water, more time may be spent viewing the mitigation area from lookout posts than is spent traveling between posts.

Survey Time

Ideally, bird surveys should be conducted in the morning hours when bird activity is often greatest (i.e. sunrise to no later than 11:00 am). Surveys can be completed before 11am if all transects have been walked or all lookout posts have been viewed with no new bird activity observed. For some sites bird surveys may need to be performed in the late afternoon or evening due to traveling constraints or weather. The overall limiting time factor will be the number of budgeted hours for the project.

Data Recording

Bird Species List: Record each bird species observed onto the Bird Survey-Field Data Sheet (or field notebook). Record the bird's common name using the appropriate 4-letter code. The 4-letter code uses the first two letters of the first two word's of the bird's common name or if one name, the first four letters. For example, Mourning Dove is coded as MODO while Mallard is coded as MALL. If an unknown individual is observed, use the 4-letter protocol, but define your

abbreviation at the bottom of the field data sheet. For example, unknown shorebird is UNSB; unknown brown bird is UNBR; unknown warbler is UNWA; and unknown waterfowl is UNWF. For a flyover of a flock of unknown species, use a term that describes the birds' general characteristics and include the approximate flock size in parenthesis; do not fill in the habitat column. For example, a flock of black, medium-sized birds could be coded as UNBB / FO (25).

Bird Density: For each observation record the actual or estimated number of individuals observed per species and per behavior. Totals can be tallied in the office and entered onto the Bird Survey-Field Data Sheet.

Bird Behavior: Bird behavior must be identified by what is known. When a species is observed, the behavior that is immediately exhibited is recorded. Only behaviors that have discreet descriptive terms should be used. The following terms are recommended: breeding pair (BP); foraging (F); flyover (FO); loafing (L), which is defined as sleeping, roosting, or floating with head tucked under wing; and nesting (N). If other behaviors that have a specific descriptive word are observed then it can be used and should later be added to the protocol. Descriptive words or phrases such as "migrating" or "living on site" are unknown behaviors.

Bird Species Habitat Use: When a species is observed, the habitat is also recorded. The following broad habitat categories are used:

- aquatic bed (AB), defined as rooted-floating, floating-leaved, or submergent vegetation.
- marsh (MA), defined as emergent (e.g. cattail, bulrush) vegetation with surface water.
- wet meadow (WM), defined as grasses, sedges, or rushes with little to no surface water.
- scrub-shrub (SS), defined as shrub covered wetland.
- forested (FO), defined as tree covered wetland.
- open water (OW), defined as unvegetated surface water.
- upland (UP), defined as the upland buffer.

Other categories can be used and defined on the data sheet and should later be added to the protocol.

Other Fields

Bird Visit: Each bird survey (i.e. spring, fall, and mid-season) should be completed on separate Bird Survey-Field Data Sheets.

Time: Record the start time and end time on the Bird Survey-Field Data Sheet.

Date: Record the date of the bird survey.

Weather: Record the weather conditions (i.e. temperature, wind, condition).

Notes: Note if a particular individual bird is using a constructed nest box and note the condition of constructed nest box(es). Also record any comments about the site, wildlife, wetland conditions, etc.

GPS MAPPING AND AERIAL PHOTO REFERENCING PROCEDURE

From 2001 through 2006, PBS&J mapped the vegetation community boundaries, photograph points, and other sampling locations in the field using the resource-grade Trimble GEO III GPS (Global Positioning System) unit. The data were collected with a minimum of three positions per feature using Course/Acquisition code. The collected data were then transferred to a personal computer (PC) and differentially corrected to the nearest operating Community Base Station. The corrected data were then exported to ACAD drawings in Montana State Plain Coordinates NAD 83 international feet.

The collected and processed Trimble Geo III GPS positions had a 68% accuracy of 7 feet except in isolated areas where accuracy fell to 12 feet. This is within the 1 to 5 meter range listed as the expected accuracy of the mapping grade Trimble GPS.

In 2007, some sites continued to be mapped using the Trimble GEO III GPS unit while most sites were mapped using the resource-grade Magellan MobileMapper Office GPS unit. The Magellan GPS unit has a comparable accuracy level to the Trimble Geo III unit.

Each year, MDT photographs each mitigation site from the air. These aerial photographs are not geo-referenced, but serve as a visual aid to map wetland development and vegetation communities, and to show approximate locations for various monitoring activities (i.e. photograph points, transects, or macroinvertebrate sampling). Reference points that are observable on the aerial photo (i.e. road, stream channel, or fence) were also marked with the GPS unit in order to better position the aerial photograph. This positioning did not remove any of the distortion inherent to all photos. All mapped features and community boundaries were reviewed by the wetland biologist, to increase the figure's accuracy.

Any relationship of features located to easement or property lines are not to be construed from these figures. These relationships can only be determined with a survey by a licensed surveyor.