
**MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2005**

*Lame Deer - East Mitigation Sites
Lame Deer, Montana*



Prepared for:

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

Prepared by:

LAND & WATER CONSULTING
~ A DIVISION OF **PBS&J**
P.O. Box 239
Helena, MT 59624

December 2005

Project No: B43054.00 - 0410



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TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
2.0 METHODS.....	1
2.1 Monitoring Dates and Activities.....	1
2.2 Hydrology	3
2.3 Vegetation.....	3
2.4 Soils.....	3
2.5 Wetland Delineation	4
2.6 Mammals, Reptiles and Amphibians	4
2.7 Birds.....	4
2.8 Macroinvertebrates	4
2.9 Functional Assessment.....	4
2.10 Photographs.....	4
2.11 GPS Data.....	5
2.12 Maintenance Needs.....	5
3.0 RESULTS	5
3.1 Hydrology	5
3.2 Vegetation.....	6
3.3 Soils.....	6
3.4 Wetland Delineation	11
3.5 Wildlife	11
3.6 Macroinvertebrates	11
3.7 Functional Assessment.....	12
3.8 Photographs.....	12
3.9 Maintenance Needs/Recommendations	12
3.10 Current Credit Summary.....	12
4.0 REFERENCES.....	13

TABLES

Table 1	<i>2002-2005 School Mitigation Site vegetation species list.</i>
Table 2a	<i>2002-2005 Transect 1 data summary.</i>
Table 2b	<i>2005 Transect 2 data summary.</i>
Table 3	<i>2002-2005 fish and wildlife species observed at the School Mitigation Site.</i>
Table 4b	<i>Summary 2005 wetland function/value ratings and functional points at the Lame Deer-East Mitigation Sites.</i>

FIGURES

Figure 1	<i>Project Site Location Map</i>
Figure 2	<i>Monitoring Activity Locations 2005 – School Mitigation Site</i> <i>Monitoring Activity Locations 2005 – Creek Mitigation Sites</i>
Figure 3	<i>Mapped Site Features 2005- School Mitigation Site</i> <i>Mapped Site Features 2005- Creek Mitigation Sites</i>

CHARTS

Chart 1	<i>Length of vegetation communities along Transect 1 (South Cell).</i>
Chart 2	<i>Transect maps showing vegetation types of Transect 1 (South Cell).</i>
Chart 3	<i>Length of vegetation communities along Transect 2 (North Cell).</i>
Chart 4	<i>Transect maps showing vegetation types of Transect 2 (North Cell).</i>

APPENDICES

Appendix A	<i>School Mitigation Site: Figures 2 - 3</i>
Appendix B	School Mitigation Site: <i>Wetland Mitigation Site Monitoring Form</i> <i>Bird Survey Forms</i> <i>Wetland Delineation Forms</i> <i>Functional Assessment Forms</i> <i>Functional Assessment Summary Tables 4 & 4a (Pre-2005)</i>

APPENDICES (continued)

Appendix C *School Mitigation Site:*

Representative Photographs and Photograph Log

Appendix D *1999 Grading and Planting Plans, School Reserve Wetland Mitigation Site*

Martin Letter: Sanitary Sewer Line

Carter-Burgess Letter Pertaining to Mitigation Wetland Acreage

Site Plans Recreated Wetlands Hwy. 212

Appendix E *Bird Survey Protocol*

GPS Protocol

Appendix F *Recreated Wetlands Hwy. 212 (WL-369 & 380):*

Figures 2 - 3

Wetland Delineation Forms

Functional Assessment Forms

Photograph Log and Representative Photographs

Cover Photo: *Hydrophytic tree species (sapling stage) School Mitigation Site, North Cell.*

1.0 INTRODUCTION

This annual report summarizes methods and results of 2005 (fourth year) monitoring for the Montana Department of Transportation's (MDT) Lame Deer - East mitigation site. The Lame Deer - East wetlands, located in Watershed #4 of the MDT Glendive District, were constructed to mitigate in part for the 2.5 acres of wetland impact to the Alderson Creek corridor during the Hwy. 212 reconstruction project. The monitoring site is located in Rosebud County within the town of Lame Deer, Section 34, Township 2 South, Range 41 East (**Figure 1**). There are three (3) mitigation sites within this area: the Lame Deer – East site is adjacent to a school in the center of town and is often referred to as the “school mitigation or reserve site”; and two recreated wetlands are located along Highway 212, Wetland 369 and Wetland 380 (the numbers correlate with MDT project survey stations). Elevations of all three mitigation sites range from 3,250 to 4,337 feet above sea level.

The Lame Deer - East monitoring site wetland (in this report referred to as the School Mitigation Site) was constructed in July/August 2001 within the historic floodplain of Lame Deer Creek; fill was historically placed within the current mitigation site to create a ball field for the school (**Figure 2, Appendix A**). The fill was removed to create and restore wetlands in the area; the intent was to create 1.23 acres and restore 0.56 acre for a total of 1.79 acres. The wetland is bisected by a sewer line that was in place prior to the wetland construction; fill removed from the constructed wetland areas was placed on top of the sewer line to create a thermal barrier (Martin 2001) and in effect an access trail to the creek. The area represented by the sewer line/trail system represents approximately 0.11 acre, which adjusts the intended size of the mitigation wetland to 1.68 acres. The resulting areas within the bisected wetland are referred to as the north and south cell in this report.

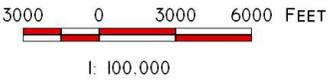
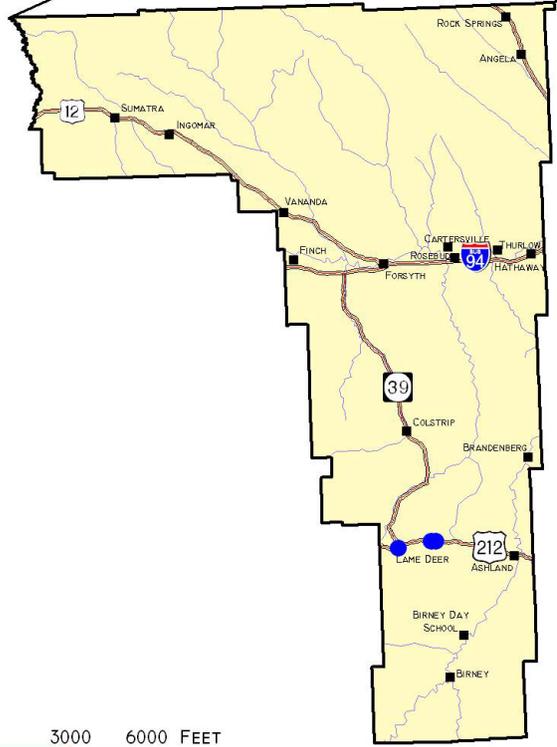
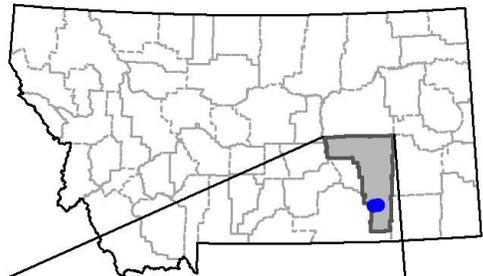
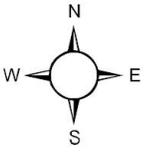
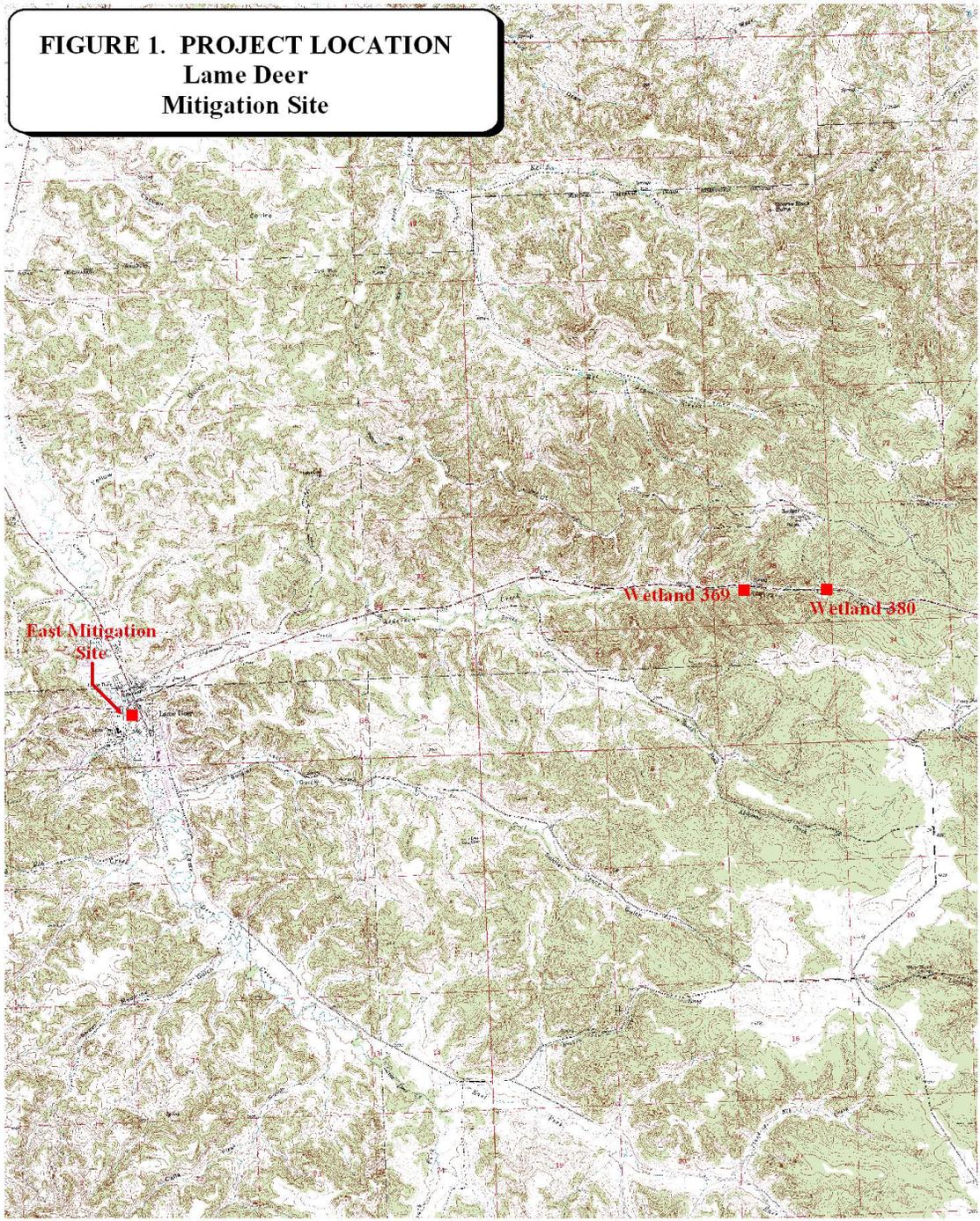
The two recreated wetlands along Hwy. 212 are adjacent to Alderson Creek: Wetland 369 is approximately 4.75 miles from the intersection of Hwy. 39 and 212 in Lame Deer (station numbers increase in an easterly direction from Lame Deer), and Wetland 380 is 5.5 miles from the intersection. The intent of these mitigation efforts was to recreate approximately 1.5 acres of wetland (Harris 1999, on file at MDT). Site plans are included in **Appendix D**. The recreated wetlands were photographed to monitor wetland development and the wetland acreage was estimated by recording the wetland boundary on an aerial photograph (**Figure 3, Appendix F**).

2.0 METHODS

2.1 Monitoring Dates and Activities

All three Lame Deer-East wetland mitigation sites were monitored on July 26, 2005. A full site investigation involving the collection of data for the Wetland Mitigation Site Monitoring Form was conducted on the school mitigation site, including COE sample point data and MDT functional assessments (**Appendix B**). Activities and information conducted/collected for the full monitoring assessment at the school mitigation site included: wetland delineation; wetland/open water data; vegetation community mapping; vegetation transects; soils data;

FIGURE 1. PROJECT LOCATION
Lame Deer
Mitigation Site



PROJECT #: 130091.040
 DATE: Dec 2002
 LOCATION:
 PROJECT MANAGER: J. BERGLUND
 DRAWN BY: B. NOECKER

LAND & WATER CONSULTING, INC.
 1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

hydrology data; bird and general wildlife use; photograph points; GPS data points; functional assessment; and, maintenance assessment of any inflow/outflow structures (non-engineering).

At the recreated wetlands along Hwy. 212, COE sample point, wetland boundary, and MDT functional assessment data were collected (**Appendix F**). Photographs were taken from photo reference points during the same monitoring event.

2.2 Hydrology

Wetland hydrology indicators were recorded using procedures outlined in the US Army Corps of Engineers (COE) 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on the Routine Wetland Delineation Data Form (**Appendix B**) at each wetland determination point. Precipitation data for the year 2004 were compared to the 1944-2005 average (WRCC 2005).

All additional hydrologic data were recorded on the school mitigation site monitoring form (**Appendix B**). The boundary between emergent vegetation and open water was mapped on the aerial photograph (**Figure 3, Appendix A**). There are no groundwater monitoring wells at the site.

The open water boundary at the Hwy. 212 recreated wetlands was mapped on aerial photographs and quantified (**Figure 3, Appendix F**).

2.3 Vegetation

General vegetation types within the school mitigation site were delineated on an aerial photograph during the site visit (**Figure 3, Appendix A**). Coverage of the dominant species in each community type is listed on the monitoring form (**Appendix B**). A comprehensive plant species list for the entire site was compiled and will be updated as new species are encountered. Observations from past years will be compared with new data to document vegetation changes over time. Woody species were planted at the school mitigation site and are listed on the monitoring form.

A transect was established in each cell of the school mitigation site; the location of the transects is shown on **Figure 2, Appendix A**. Percent cover for each species was recorded on the vegetation transect form (**Appendix B**). Transect ends were marked with metal fence posts and their locations recorded on the vegetation map. Photos of the transect were taken from both ends during the site visit.

The emergent vegetation boundary at the Hwy. 212 recreated wetlands was mapped on aerial photographs and quantified (**Figure 3, Appendix F**).

2.4 Soils

Soils were evaluated during the site visit according to the procedure outlined in the COE 1987 Wetland Delineation Manual. Soil data were recorded for each wetland determination point on

the COE Routine Wetland Delineation Data Forms (**Appendix B-School Site; Appendix F-HWY 212 Wetland Sites**).

2.5 Wetland Delineation

A wetland delineation was conducted within the assessment area according to 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: North Plains Region 4 (Reed 1988). The information was recorded on the COE Routine Wetland Delineation Forms (**Appendix B-School Site; Appendix F-Hwy. 212 Wetland Sites**). The wetland boundaries at the school mitigation site (**Figure 3, Appendix A**) and the recreated wetlands along Hwy. 212 (**Figure 3, Appendix F**) were mapped on aerial photographs.

2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations were recorded on the wetland monitoring form during the site visit (**Appendix B**). Indirect use indicators were also recorded including tracks, scat and burrows. A comprehensive wildlife species list for the entire site was compiled and will be updated as new species are encountered. Observations from past years will be compared with new data to determine if wildlife use is changing over time.

2.7 Birds

Bird observations were recorded during the site visit according to the established bird survey protocol (**Appendix E**). A general, qualitative bird list has been compiled using these observations. Observations will be compared between years in future studies.

2.8 Macroinvertebrates

No macroinvertebrate samples were collected on the site.

2.9 Functional Assessment

A functional assessment form was completed in 2005 for all mitigation monitoring sites using the 1999 MDT Montana Wetland Assessment Method. Field data necessary for this assessment were collected on a condensed data sheet. The remainder of the assessment was completed in the office. Completed functional assessment forms for the school site are included in **Appendix B**. Functional assessments of the Hwy. 212 recreated wetlands were also conducted; completed forms are included in **Appendix F**.

2.10 Photographs

Photographs were taken showing the current land use surrounding the mitigation monitoring site, the wetland buffer, the monitored area, and the vegetation transect (**Appendix C**). A description

and compass direction for each photograph were recorded on the wetland monitoring form. During the 2002 monitoring season, each photo-point was marked on the ground with a wooden stake and the location recorded with a resource grade GPS. The approximate photograph locations are shown on **Figure 2, Appendix A**.

Photographs were also taken of the recreated wetlands east of Lame Deer along Hwy. 212 (**Appendix F**); photo logs of the recreated wetlands are also included in **Appendix F**. All on-site photographs were taken with a digital camera.

2.11 GPS Data

During the 2002 monitoring season, survey points were collected at the monitoring site using a resource grade Trimble, Geoexplorer III hand-held GPS unit (**Appendix E**). Points collected at the school site included: the vegetation transect beginning and ending locations; photograph locations; and the jurisdictional wetland boundary. In addition, survey points were collected at several landmarks recognizable on the air photo for purposes of line fitting to the topography. At wetlands 369 and 380, photo reference points and photo location data were also collected using GPS. No additional GPS data were collected in 2005.

2.12 Maintenance Needs

No bird boxes are located within this site. The inflow (and outflow for wetlands 380 and 369) structures was checked for obstructions.

3.0 RESULTS

3.1 Hydrology

The Lame Deer - East mitigation monitoring site was constructed in July/August 2001 to be a 1 to 1.5-acre wetland within the floodplain of Lame Deer Creek. The hydrologic source of the mitigation wetland is primarily ground and stormwater and secondarily overbank flows from Lame Deer Creek. Stormwater enters the southwest corner of the south cell through an up-gradient culvert under the access road. The north and south cells were created when fill from the wetland construction was placed over the sanitary sewer line to protect it from damage; the sewer line and fill effectively create the two cells.

During the July 26, 2005 visit, the south cell site was inundated with an average of 6 inches of standing water. The north cell had no surface water but was saturated throughout a majority of the wetland boundary area. Wetlands 369 and 380 were inundated. The outlet culvert in wetland 369 was plugged by sediment and debris, a beaver dam had been built across the outlet area, and water running across the culverted road had begun to erode and back-cut into the fill surrounding the downhill end of the culvert.

Precipitation data for the Busby station indicate that the yearly average (1944-March 2005) is 14.05 inches (WRCC 2005); through the month of May (data incomplete for June and July) the

average precipitation was 5.58 inches. During 2005, precipitation through the month of May was 9.57 inches or 171% of the average. With the exception of 2003, yearly precipitation had been below average since 1999; the drought may have begun to recede during 2005.

3.2 Vegetation

Vegetation species identified within both cells of the school monitoring site are presented in **Table 1** and in the monitoring form (**Appendix B**). There are nine (9) vegetation communities defined within the monitoring form, however, as a result of community transitions and expansions, only five (5) were mapped in 2005 (**Figure 3, Appendix A and Charts 1-4**). The communities include: Type 1, *Scirpus* spp.; Type 2, *Hordeum jubatum*/*Eleocharis palustris*; Type 3, *Salix exigua*/*Puccinellia nuttalliana*; Type 4, Upland (Undeveloped Wetland); Type 5 *Agropyron* sp./*Melilotus officinale*; Type 6, *Melilotus officinale*/*Lactuca serriola*/*Cirsium arvensis*; Type 7, *Scirpus pungens*/*Hordeum jubatum*; Type 8, *Populus tremula*/*Salix exigua*/*Scirpus pungens*, and Type 9, *Hordeum jubatum*. Dominant species within each community are listed on the monitoring form (**Appendix B**). The vegetation transect results are detailed in the monitoring form (**Appendix B**) and are summarized below in **Tables 2a** and **2b** and **Charts 1-4**.

Total vegetation cover and percent cover of wetland species has increased in the south cell along transect 1 since 2002 (**Table 2a**). Most of the sprigged willows continue to survive and the basin of the cell has homogenized into one large community type (Type 1).

The transect within the north cell was established in 2002 (**Table 2a**). Three distinct community types have established within the north cell. The substrate continues to be saturated into the upland vegetation zone and it is anticipated that wetland vegetation will continue to colonize these areas in future growing seasons.

Wetland vegetation at W-369 has started to expand in areas adjacent to the stream inlet. The remainder of the perimeter continues to be inundated to the base of the adjacent slope where the saturation zone is inhibited by the steepness of the slope. Therefore, hydrophytic vegetation has not colonized most of the open water perimeter. The vegetation around Wetland-380 has increased in complexity and to a small extent expanded into the saturated upland zone surrounding the pond (see COE forms for partial species list).

3.3 Soils

The school site was mapped as part of the Rosebud County Soil Survey. The soil series on the mitigation site is Straw-Canburn complex (Map Unit 172). The Straw component is a non-hydric well drained loam and the Canburn is a hydric very poorly drained loam. The dominant parent material in both components is alluvium with infrequent flooding of the Straw component and frequent flooding of the Canburn component. Soils on the site generally matched these descriptions.

Soils were sampled at two wetland locations: SP-1, South Cell and SP-3, North Cell. Soils at SP-1 were dark and olive gray (5Y 4/1, 4/1) silty sand at a depth of 10 inches. In the north cell, SP-3 included very dark grayish and olive brown clay silt loam (2.5 Y 3/2, 4/3) at a depth of 10 inches. Saturation and water in the pit to a depth of 1 inch were observed in the south cell wetland soil pit and saturation was noted in the north cell wetland pit. COE data sheets for the school site are included in **Appendix B**.

Along route 212 in the vicinity of the recreated wetland sites, the soils are Bitton-Shambo complex (Map Unit 26); a well drained channery loam and loam (respectively) soil complex. At site 369, black (10 YR 2/1) soils were saturated to the surface and were a coarse mix of sand, silt and clay at a depth of 10 inches. At site 380, black (10 YR 2/1) soils were saturated at a depth of 10 inches. COE data sheets for wetlands 369 and 380 are included in **Appendix F**.

Table 1: 2002-2005 School Mitigation Site vegetation species list.

Scientific Name	Region 4 (North Plains) Wetland Indicator Status
<i>Agropyron</i> spp.	FAC-FACU
<i>Chenopodium hybridum</i>	-(FAC)
<i>Carex lanuginosa</i> .	OBL
<i>Carex praeegracilis</i>	FACW
<i>Eleocharis palustris</i>	OBL
<i>Equisetum hyemale</i>	FACW
<i>Glyceria grandis</i>	OBL
<i>Glycyrrhiza lepidota</i>	FACU
<i>Hordeum jubatum</i>	FACW
<i>Juncus bufonius</i>	OBL
<i>Lactuca serriola</i>	FACU
<i>Melilotus officinalis</i>	FACU-
<i>Mentha arvensis</i>	FACW
<i>Pastinaca sativa</i>	-
<i>Populus tremula</i>	FAC
<i>Puccinellia distans</i>	FACW
<i>Puccinellia nuttalliana</i>	OBL
<i>Rumex crispus</i>	FACW
<i>Salix exigua</i> (planted)	FACW+
<i>Salix</i> spp. (young sprig)	(FACW-OBL)
<i>Scirpus acutus</i>	OBL
<i>Scirpus pungens</i>	OBL
<i>Trifolium</i> spp.	(unknown-assumed UPL)
<i>Typha latifolia</i>	OBL

¹ **Bolded** species indicate those documented within the analysis area for the first time in 2005.

-Species either not included or classified as “non-indicator” for the North Plains Region in the National List of Plant Species that Occur in Wetlands (Reed 1988); status in parentheses are probable based on national indicators and classifications for adjacent regions.

Table 2a: 2002-2005 Transect 1 data summary.

Monitoring Year	2002	2003	2004	2005
Transect Length (feet)	207	207	207	207
# Vegetation Community Transitions along Transect	3	3	0	0
# Vegetation Communities along Transect	3	3	1	1
# Hydrophytic Vegetation Communities along Transect	2	2	1	1
Total Vegetative Species	9	8	7	4*
Total Hydrophytic Species	6	5	6	4*
Total Upland Species	3	3	1	0
Estimated % Total Vegetative Cover	53	80	99	99
% Transect Length Comprised of Hydrophytic Vegetation Communities	29	90	100	100
% Transect Length Comprised of Upland Vegetation Communities	71	10	0	0
% Transect Length Comprised of Unvegetated Open Water	0	0	0	0
% Transect Length Comprised of Bare Substrate	0*	0	0	0

* Inundated up to 15 inches, unable to walk through center, and species were counted by what was most visible from the more shallow areas.

Chart 1: Length of vegetation communities within Transect 1 (South Cell).

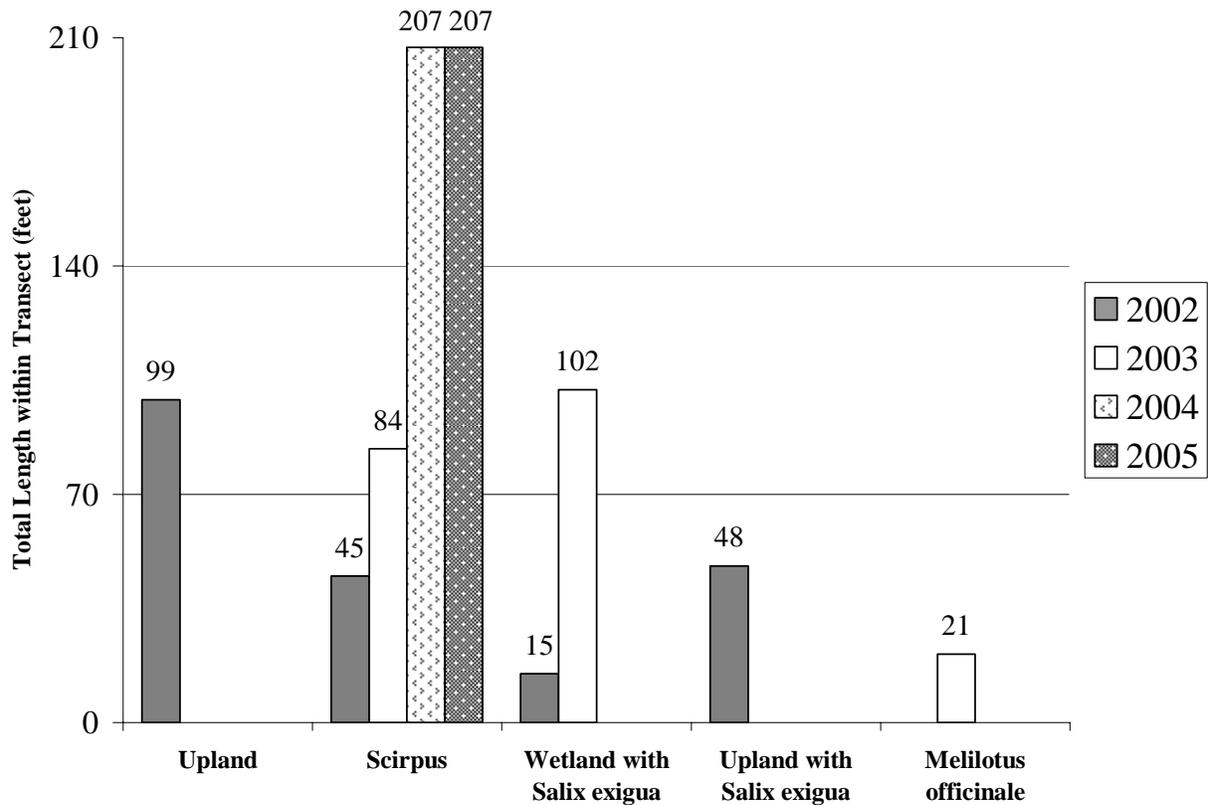


Chart 2: Transect maps showing vegetation types of Transect 1 (South Cell).

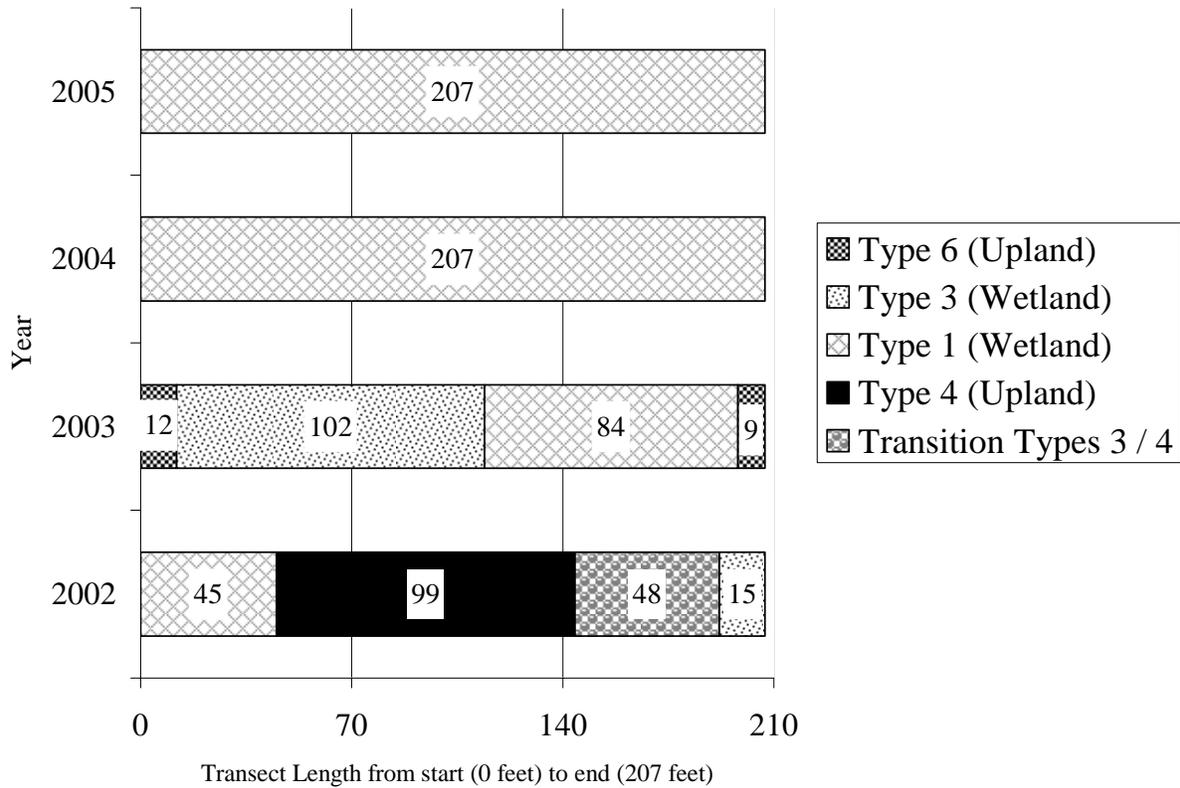


Table 2b: 2005 Transect 2 data summary.

Monitoring Year	2003	2004	2005
Transect Length (feet)	162	162	162
# Vegetation Community Transitions along Transect	4	3	3
# Vegetation Communities along Transect	2	3	3
# Hydrophytic Vegetation Communities along Transect	1	2	2
Total Vegetative Species	12	13	16
Total Hydrophytic Species	9	9	12
Total Upland Species	3	4	4
Estimated % Total Vegetative Cover	100	100	100
% Transect Length Comprised of Hydrophytic Vegetation Communities	28	67	75
% Transect Length Comprised of Upland Vegetation Communities	72	33	25
% Transect Length Comprised of Unvegetated Open Water	0	0	0
% Transect Length Comprised of Bare Substrate	0	0	0

Chart 3: Length of vegetation communities within Transect 2 (North Cell).

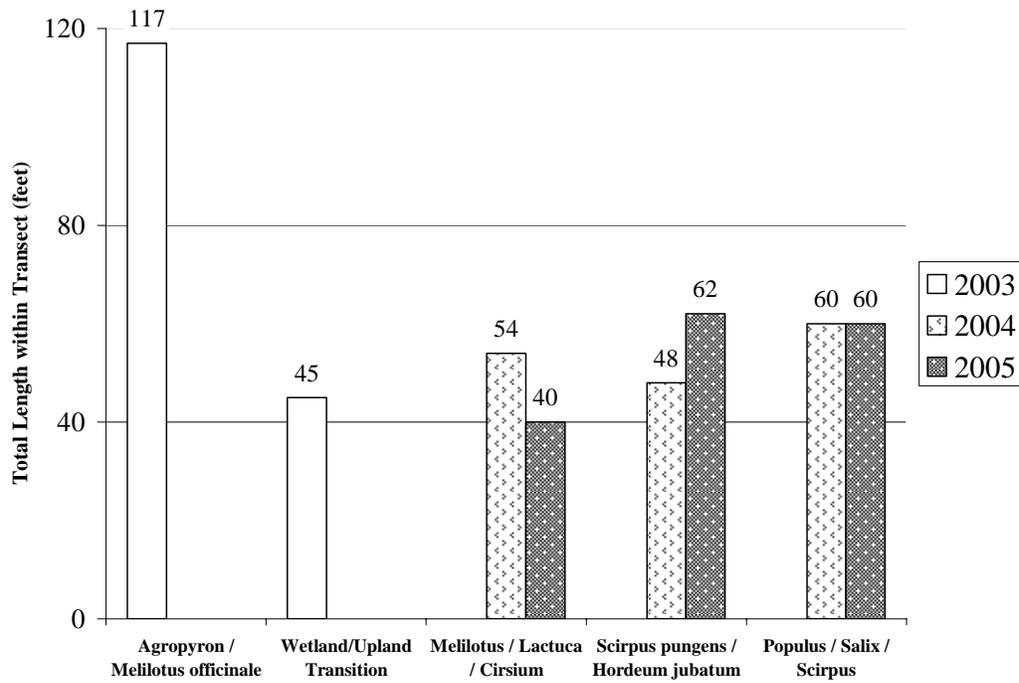
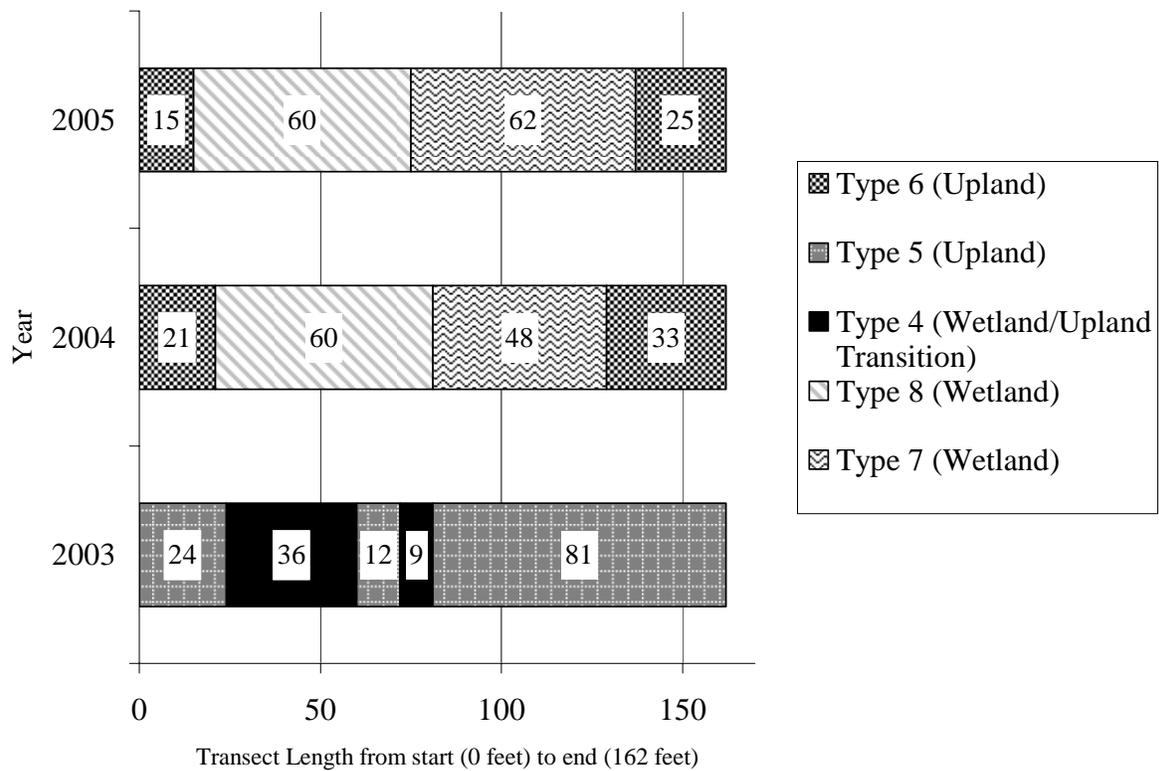


Chart 4: Transect maps showing vegetation types of Transect 2 (North Cell) from start (0 feet) to end (162 feet) for each year monitored.



3.4 Wetland Delineation

The delineated wetland boundary at the school mitigation site is depicted on **Figure 3, Appendix A**. The delineation resulted in a total of 0.82 acre of wetland development within the north and south cells; an increase of 0.20 acre since 2004. The percent cover of the south cell continues to increase as a result of stormwater collection; rain the day before of investigation resulted in 6 to 15 inches of surface water throughout the entire south cell. The south cell has likely reached its limit of wetland development; saturation levels were observed 6 to 12 inches up the slope of the surrounding berm. It is unlikely that further saturation or wetland vegetation development within the south cell will occur to any significant amount. The north cell has developed three wetland communities and has nearly expanded to the edge of the constructed basin. The north cell has the potential and available area to expand up to an additional 0.25 acre. The COE data forms are included in **Appendix B**.

The estimated gross wetland acreages for the recreated wetlands along Hwy. 212 were 0.7 acre at Wetland 369 and 0.36 acre at Wetland 380 for a total of 1.07 acres (**Figure 3, Appendix F**). Wetland 369 was 11% (0.04 acre) vegetated and Wetland 380 was 55% vegetated. The total gross wetland acreage within the three Lame Deer-East mitigation sites is 1.89 acres.

3.5 Wildlife

Wildlife species observed at the school mitigation site are listed in **Table 3**. No bird boxes have been installed at this site. In the south cell a hen waterfowl was obscured by thick wetland vegetation and could not be identified. A flock of Cedar Waxwings was using the tall *Scirpus* species within the south cell to roost while foraging over the wetland.

Table 3. 2002-2005 fish and wildlife species observed at the School Mitigation Site.

AMPHIBIANS AND REPTILES	
Northern Leopard Frog (<i>Rana pipiens</i>)	
BIRDS	
American Robin (<i>Turdus migratorius</i>)	Eastern Kingbird (<i>Tyrannus tyrannus</i>)
Cedar Waxwing (<i>Bombycilla cedorum</i>)	Song Sparrow* (<i>Melospiza melodia</i>)
Common Grackle* (<i>Quiscalus quiscula</i>)	Yellow Warbler* (<i>Dendroica petechia</i>)
Common Yellowthroat (<i>Geothlypis trichas</i>)	Unidentified waterfowl
MAMMALS	
Cattle (tracks)	

*Individuals not in wetland but in adjoining upland.

Bolded species indicate those documented within the analysis area in 2005.

3.6 Macroinvertebrates

No macroinvertebrate samples were collected on the site.

3.7 Functional Assessment

Completed functional assessment forms for the school monitoring site are included in **Appendix B**; summary Tables 4 and 4a for all previous monitoring years are also included in **Appendix B**. The 1999 “baseline” functional assessment is not directly comparable because the assessment area included 20-30 acres of floodplain on the north and south sides of Hwy. 212. The assessment does provide valuable information regarding the baseline characteristics of floodplain wetlands in that area; the general wetland floodplain rated as a Category III wetland in 1999 (Harris 1999).

The school mitigation monitoring site continued to score as a Category III wetland in 2005 (**Table 4b**). The percent possible score increased from 55% to 61% since 2004. As wildlife use increases the school mitigation site will likely attain a Category II status. Wetland 369 is classified as a Category II wetland due to a high rating for wildlife habitat. The functional units are the “maximum” value because of the low percentage of hydrophytic vegetation (11% or 0.04 acre) within the site boundary. Wetland 380 is also a Category II site due to the breeding population of the Northern Leopard frog. Functional assessment forms are included in **Appendix B** (school site) and **Appendix F** (Hwy. 212 sites). Total functional unit gain for all Lame Deer-East Mitigation sites as of 2005 is 12.99 units.

3.8 Photographs

Representative photos taken from photo points and transect ends are included in **Appendix C**. Photos of the recreated wetlands along Hwy. 212 are included in **Appendix F**.

3.9 Maintenance Needs/Recommendations

The stormwater inlet culvert in the southwest corner of the south cell was in working order and required no maintenance. Soil saturation has expanded in the north cell since 2004. The outflow culvert in Wetland-369 is blocked by sediment and debris and the beaver dam along the edge of the outflow area is larger than it was in 2004. It is likely that the sediment input resulted from the collapse of the bank along the north east edge of the excavated area. Water had washed over the road within the last year and has begun to erode the fill around the culvert. Water was flowing around and undermining the culvert at the time of the investigation.

3.10 Current Credit Summary

The intended size of the school mitigation site wetland was 1.68 acres. An additional 1.5 acres of wetlands were intended to develop along Hwy. 212 for a total of 3.18 acres. The 2005 delineation at the school site resulted in a total of 0.82 acre of wetland development within the north and south cells. The estimated gross wetland acreages for the recreated wetlands along Hwy. 212 were 0.7 acre at Wetland 369 and 0.36 acre at Wetland 380 for a total of 1.06 acres (**Figure 3, Appendix F**). The total gross wetland acreage within the three Lame Deer-East mitigation sites as of 2005 is 1.88 acres or 59% of the mitigation goal. The south cell of the school mitigation site wetland has developed to the edge of the berm and the north cell may continue to develop an additional 0.25 acre. The Hwy. 212 Wetland 380 is likely at the

maximum wetland acreage and W-369 is at the maximum inundation level; however, wetland vegetation represents 11% or 0.04 acre.

Wetland-369 and Wetland-380 are Category II wetlands, while the school site remains a Category III wetland. Total functional unit gain for all Lame Deer-East Mitigation sites as of 2005 is 12.99 units.

Table 4b: Summary 2005 wetland function/value ratings and functional points at the Lame Deer-East Mitigation Sites.

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	2005 School Site	2005 W-369	2005 W-380
Listed/Proposed T&E Species Habitat	Low (0)	Low (0)	Low (0)
MNHP Species Habitat	Moderate (.7)	Low (0)	High (1.0)
General Wildlife Habitat	Moderate (.7)	High (.9)	High (.9)
General Fish/Aquatic Habitat	NA	Moderate (.6)	High (.8)
Flood Attenuation	Low (.2)	Low (.2)	Low (.1)
Short and Long Term Surface Water Storage	Moderate (.6)	Moderate (.4)	Moderate (.4)
Sediment, Nutrient, Toxicant Removal	Moderate (.7)	Moderate (.7)	Moderate (.6)
Sediment/Shoreline Stabilization	High (.9)	Low (.3)	High (1.0)
Production Export/Food Chain Support	Low (.5)	Moderate (.4)	Moderate (.4)
Groundwater Discharge/Recharge	High (1)	High (1)	High (1)
Uniqueness	Mod (.4)	Mod (.4)	Mod (.4)
Recreation/Education Potential	High (1)	High (1)	High (1.0)
Actual Points/Possible Points	6.7/11	5.9/12	7.6/12
% of Possible Score Achieved	61%	49%	63%
Overall Category	III	II	II
Total Acreage of Assessed Wetlands within Monitoring Area	0.82	0.7	0.36
Total Functional Units (acreage x actual points)	5.49	4.76 (Maximum)	2.74
Net Acreage Gain ("new" wetlands)	0.82	0.7	0.36
Net Functional Unit Gain (new acreage x actual points)	5.49	4.76 (Maximum)	2.74
Total Functional Unit Gain Lame Deer-East Mitigation Sites	12.99		

4.0 REFERENCES

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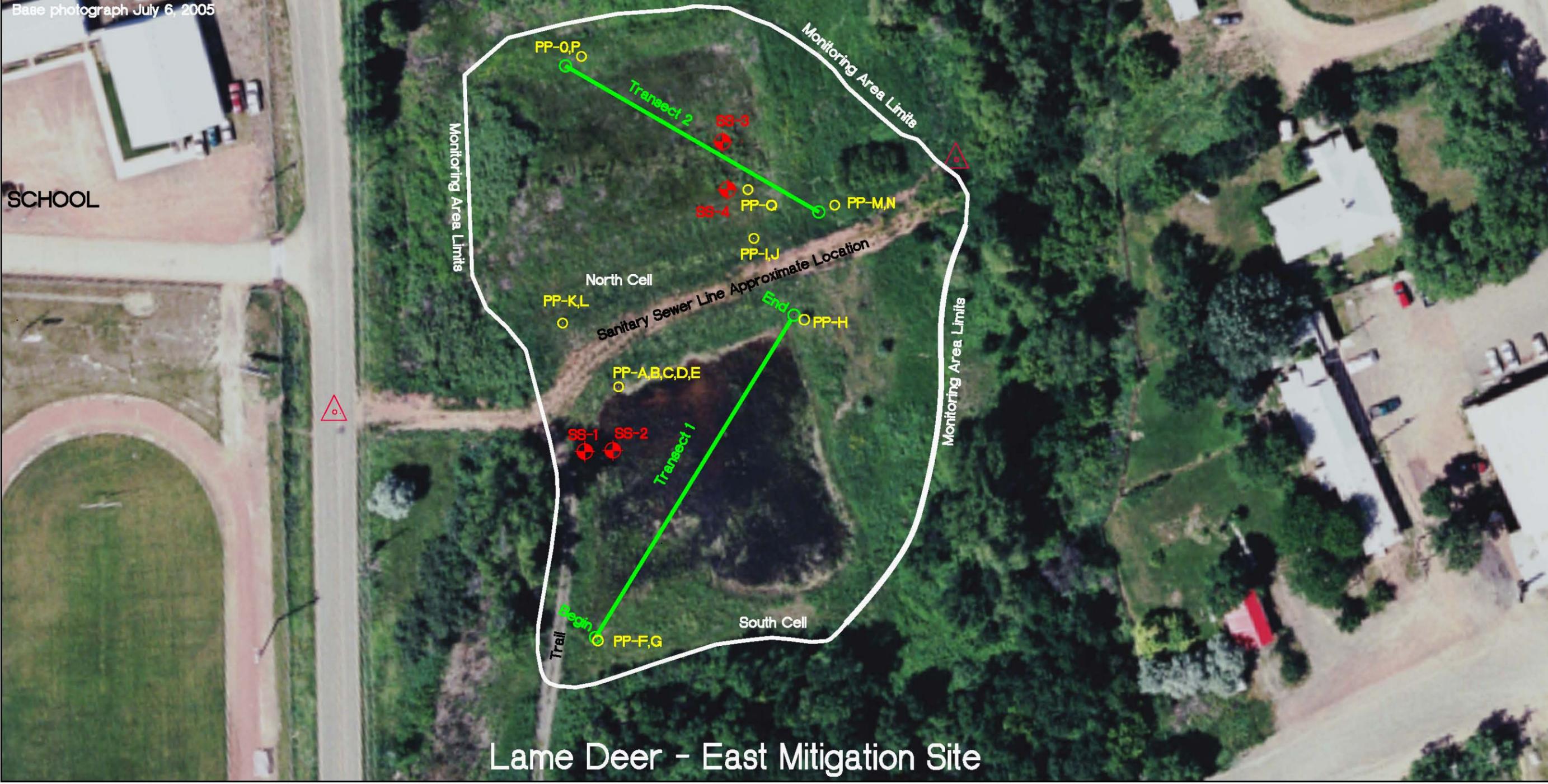
Appendix A

2005 SCHOOL MITIGATION SITE: FIGURES 2 & 3

*MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer - East, Montana*

Figure 2 - Monitoring Activity Locations 2005

- Monitoring Area Limits
- Vegetation Transect
- Aerial Reference Point
- Photo Point
- Soil Sample
- Base photograph July 6, 2005



Lame Deer - East Mitigation Site

PROJECT NAME MDT Lame Deer - East Mitigation Site	
DRAWING TITLE Monitoring Activity Locations 2005	
PRJ NO: B45054.0410	DRAWN: SH
LOCATION: Lame Deer, MT	PROJ MGR: JB
SCALE: 1"=60'	CHECKED: LB
FILE NAME: 2005 BASE.dwg	APPVD: JB
SHEET	
2	
REV 01	
Nov/14/2005	

Figure 3 - Mapped Site Features 2005

Monitoring Area Limits ———
 Wetland Boundary ———
 Vegetation Community Limits ———
 Base photograph July 6, 2005
 Wetland Area 0.82 Acres



Vegetation Communities:

- ① Scirpus spp.
- ② Hordeum jubatum/Eleocharis palustris
- ③ Salix exigua/Puccinellia nuttalliana
- ④ Upland (undeveloped wetland)
- ⑤ Agropyron sp./Mellilotus officinale
- ⑥ Melilotis officinale/Lactuca serriola/Cirsium arvensis
- ⑦ Scirpus pungens/Hordeum jubatum
- ⑧ Populus tremula/Salix exigua/Scirpus pungens
- ⑨ Hordeum jubatum

Lame Deer - East Mitigation Site

PROJECT NAME MDT Lame Deer - East Mitigation Site		DRAWING TITLE Mapped Site Features 2005	
PRJ NO: B45054.0410	DRAWN: SH	CHECKED: LB	APPVD: JB
LOCATION: Lame Deer, MT	PROJ MGR: JB		
SCALE: 1"=60'			
FILE NAME: 2005 BASE.dwg			
		SHEET 3 REV 01 Nov/17/2005	

Appendix B

**2005 SCHOOL MITIGATION SITE:
WETLAND MITIGATION SITE MONITORING FORM
BIRD SURVEY FORMS
WETLAND DELINEATION FORMS
FUNCTIONAL ASSESSMENT TABLES 4 & 4A
FUNCTIONAL ASSESSMENT FORMS**

*MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer, Montana*

VEGETATION COMMUNITIES

Community No.: 1 Community Title (main species): *Scirpus* spp.

Dominant Species	% Cover	Dominant Species	% Cover
SCIACU	55	CARLAN	<1
ELEPAL	20	SALEXI	<5
HORJUB	<5	JUNTOR	20
EQUHYM	<1	TYPLAT	<5
PUCNUT	<5	SCIPUN	<5
JUNBUF	<1	mud	<5

COMMENTS/PROBLEMS: _____

Community No.: 2 Community Title (main species): *Hordeum jubatum/Eleocharis palustris*

Dominant Species	% Cover	Dominant Species	% Cover
RUNCRI	<5	LACSER	<5
HORJUB	40	MELOFF	40
SALEXI	<5	SCIPUN	<5
PUCNUT	<5	ELEPAL	<5
TYPLAT	<5	AGRsp.	<5

COMMENTS/PROBLEMS: _____

Community No.: 3 Community Title (main species): *Salix exigua/Puccinellia nutalliana*

Dominant Species	% Cover	Dominant Species	% Cover
SALEXI	10	ELEPAL	10
PUCNUT	20	Openwater	50
HORJUB	<1	TYPLAT	<1
JUNBUF	<1	AGRsp.	<1
SCIACU/SCIPUN	10		

COMMENTS/PROBLEMS:

VEGETATION COMMUNITIES (continued)

Community No.: 4 Community Title (main species): Transitional Upland/Wetland

Dominant Species	% Cover	Dominant Species	% Cover
(MUD)	(65%)	GLYELA	<5
SALEXI	10	TRIFOLIUM spp.	10
LACSER	<5		
CHEHYB	<5		
JUNBUF	<5		

COMMENTS/PROBLEMS: This CT may have patches of upland interspersed w/ WL patches: **transitional.**

Community No.: 5 Community Title (main species): Agopyron sp./Melolotis officinale

Dominant Species	% Cover	Dominant Species	% Cover
AGRsp.	45	HORJUB	<5
POPTRE	<1	SALEXI (25 sprigged)	
SCIPUN	<5		
SALsp.	<1		
MELOFF	45		

COMMENTS/PROBLEMS:

Community No.: 6 Community Title (main species): Melolotis officinale/Lactuca serriola/Cirium arvensis

Dominant Species	% Cover	Dominant Species	% Cover
MELOFF (biennial pattern or has been sprayed)	5	CHEsp.	5
LACSER	40	PASSAT	1
CIRARV	40	GLYLEP	1
AGRsp.	15	ELEPAL	1
CARPRA	1		

COMMENTS/PROBLEMS:

VEGETATION COMMUNITIES (continued)

Community No.: 7 Community Title (main species): *Scirpus pungens/Hordeum jubatum* _____

Dominant Species	% Cover	Dominant Species	% Cover
RUNCRI	<1	LACSER	<1
HORJUB	5	SCIPUN	90
PUCNUT	<1	ELEPAL	5
PUCDIS	<1	AGRSP.	<1
TYPLAT	<1	CARsp. (no inflor.)	<1

COMMENTS/PROBLEMS:

Community No.: 8 Community Title (main species): *Populus tremula/Salix exigua/Scirpus pungens* _____

Dominant Species	% Cover	Dominant Species	% Cover
POPTRE	30	SCIPUN	20
SALEXI	30	LACSER	<1
Salix sp.	<1	TYPLAT	<1
Kochia sp.	5	PUCDIS	1
MELOFF	<1	PUNUT	1

COMMENTS/PROBLEMS: also TYPLAT, SCIACU, JUNTOR <1

Community No.: 9 Community Title (main species): *Hordeum jubatum* _____

Dominant Species	% Cover	Dominant Species	% Cover
HORJUB	60	PHAARU	<1
POAPAL?? (C)	20	SCIPUN	5
LACSER	5		
RUMCRI	5		
AGRsp.	5		

COMMENTS/PROBLEMS:

Additional Activities Checklist:

Record and map vegetative communities on air photo

PHOTOGRAPHS

Using a camera with a 50 mm lenses and color film take photographs of the following permanent reference points listed in the checklist below. Record the direction of the photograph using a compass. (The first time at each site establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3' above ground, survey the location with a resource grade GPS and mark the location on the air photo.)

Checklist:

- One photo for each of the 4 cardinal directions surrounding wetland
- At least one photo showing upland use surrounding wetland – if more than one upland use exists, take additional photos
- At least one photo showing buffer surrounding wetland
- One photo from each end of vegetation transect showing transect

South Cell:

Location	Photograph Description	Compass Reading
A	south cell wetland view, border	170
B	south cell wetland view, center	130
C	south cell wetland view, border	76
D	across dike from south cell toward school	290
E	across dike from south cell toward north cell	17
F	from storm culvert across south cell	~130
G	south cell, beginning of transect	130
H	south cell, end of transect	210
I	north cell view from central dike toward 212 stop sign	16
J	north cell view toward creek	314
K	north cell, vegetation along north side of dike	44
L	north cell, vegetation east of road and north of dike	18
M	north cell, south transect end	358
N	north cell, interior view south	290
O	north cell, north transect end	174
P	north cell, interior view north	100
Q	interior of north cell wetland	west

COMMENTS/PROBLEMS:

GPS SURVEYING

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

Checklist:

- Jurisdictional wetland boundary
- 4-6 landmarks recognizable on the air photo
- Start and end points of vegetation transect(s)
- Photo reference points
- NA Groundwater monitoring well locations

COMMENTS/PROBLEMS:

WETLAND DELINEATION

(Attach Corps of Engineers delineation forms)

At each site conduct the items on the checklist below:

- Delineate wetlands according to the 1987 Army Corps manual.
- Delineate wetland-upland boundary on the air photo
- * Survey wetland-upland boundary with a resource grade GPS survey

COMMENTS/PROBLEMS: Wetland areas hand drawn on 2005 aerial.

FUNCTIONAL ASSESSMENT

(Complete and attach full MDT Montana Wetland Assessment Method field forms; also attach abbreviated field forms, if used)

COMMENTS/PROBLEMS: One FA done for north and south cells combined.

MAINTENANCE

Were man-made nesting structures installed at this site? YES ___ NO ___

If yes, do they need to be repaired? YES ___ NO ___

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

Were man-made structures build or installed to impound water or control water flow into or out of the wetland?

YES * ___ NO ___

If yes, are the structures working properly and in good working order? YES ___ NO ___

If no, describe the problems below.

COMMENTS/PROBLEMS: utility line berm separates south from north cell _____

MDT WETLAND MONITORING – VEGETATION TRANSECT (SOUTH CELL)

Site: Lame Deer-SOUTH CELL Date: 7/26/05 Examiner: LB/LWC Transect # 1

Approx. transect length: 45 deg (SW to NE) Compass Direction from Start (G): 207 ft

Vegetation type A:		CT 1
Length of transect in this type:	207'	
Species:		Cover:
SCIACU		90
SALEXI		2
ELEPAL		10
TYPLAT		2
Open water between veg stalks		1
(may be other species in center, water was overtopping boots)		
Total Vegetative Cover:		99%

Vegetation type B:		
Length of transect in this type:		feet
Species:		Cover:
Total Vegetative Cover:		

Vegetation type C:		
Length of transect in this type:		feet
Species:		Cover:
Total Vegetative Cover:		

Vegetation type D:		
Length of transect in this type:		feet
Species:		Cover:
Total Vegetative Cover:		

SOILS

Map Unit Name		Straw-Canburn		Drainage Class:	well; very poor (resp.)
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		mixed Cumulic Haploborolls; frigid Cumulic Haploborolls		Confirm Mapped	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
				Type?	<input type="checkbox"/> <input type="checkbox"/>
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	B	7.5 YR 4/1,4/2			silty sand
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			
Hydric soils are evidently developing.					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Remarks:		
Wetland completely developed in Cell 1, maximum acreage attained.		

Approved by HQUSACE 2/92

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

Project/Site: <u>Lame Deer</u> Applicant/Owner: <u>MDT</u> Investigator: <u>LB/LWC</u>	Date: <u>7/26/05 (South Cell)</u> County: <u>Rosebud</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>UPL</u> Transect ID: <u>1</u> Plot ID: <u>SP-2</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	CIRARV	H	FACU	9			
2	LACSER	H	FACU	10			
3	AGR spp.	H	(FACU)	11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/3

sample point is on bank adjacent to transect end.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>-</u> (in.) Depth to Free Water in Pit: <u>-</u> (in.) Depth to Saturated Soil: <u>@surface</u> (in.)	
Remarks: Rain event last night an yesterday.	

SOILS

Map Unit Name		Straw-Canburn		Drainage Class: <u>well; very poor (resp.)</u>	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		<u>mixed Cumulic Haploborolls; frigid Cumulic Haploborolls (resp.)</u>		Confirm Mapped Type? <u>X</u> Yes <u> </u> No	
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	B	5YR 4/1,4/2			Silt sand
Hydric Soil Indicators:					
<u> </u> Histosol		<u> </u> Concretions			
<u> </u> Histic Epipedon		<u> </u> High Organic Content in surface Layer in Sandy Soils			
<u> </u> Sulfidic Odor		<u> </u> Organic Streaking in Sandy Soils			
<u> </u> Aquic Moisture Regime		<u> </u> Listed on Local Hydric Soils List			
<u> </u> Reducing Conditions		<u> </u> Listed on National Hydric Soils List			
<u>X</u> Gleyed or Low-Chroma Colors		<u> </u> Other (Explain in Remarks)			

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> </u> Yes <u>X</u> No	Is this Sampling Point Within a Wetland? <u> </u> Yes <u>X</u> No
Wetland Hydrology Present? <u>X</u> Yes <u> </u> No	
Hydric Soils Present? <u>X</u> Yes <u> </u> No	
Remarks:	
Wetland may develop up bank slope 1-2 feet above current level if adequate moisture is available. Basically, wetland in south cell 100% developed to apparent limits, but an extra 1-2 feet around perimeter may be gained if hydrologic conditions are right (rain, end of drought, etc.).	

Approved by HQUSACE 2/92

SOILS

Map Unit Name		Straw-Canburn		Drainage Class:	well; very poor (resp.)
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		mixed Cumulic Haploborolls; frigid Cumulic Haploborolls		Confirm Mapped	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
				Type?	<input type="checkbox"/> <input type="checkbox"/>
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	2.5Y 3/2,4/3	2.5 YR 3/6		Silt clay loam
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Remarks:		
Wetland continues to expand toward base of berm.		

Approved by HQUSACE 2/92

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

Project/Site: <u>Lame Deer</u> Applicant/Owner: <u>MDT</u> Investigator: <u>LB/LWC</u>	Date: <u>7/26/05 (North Cell)</u> County: <u>Rosebud</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>emergent</u> Transect ID: <u>2</u> Plot ID: <u>SP-4</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	CIRARV	H	FACU	9	AGRsp.	H	(FACU)
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). _____

If CHEN FAC, FAC neutral = upland dominance.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <input type="checkbox"/> - (in.) Depth to Free Water in Pit: <input type="checkbox"/> - (in.) Depth to Saturated Soil: <input type="checkbox"/> - (in.)	
Remarks: Soil pit about 3 ft above current wetland boundary.	

SOILS

Map Unit Name		Straw-Canburn		Drainage Class:	well; very poor (resp.)
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		mixed Cumulic Haploborolls; frigid Cumulic Haploborolls		Confirm Mapped Type?	X Yes No
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	10YR 3/3			Silt sand
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Remarks:		
Wetland will likely not expand into this zone ~ 3ft above current wetland boundary.		

Approved by HQUSACE 2/92

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
- 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 and Rating	---	---	---	---	---	---	0 (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 Rana pipiens
- Incidental habitat (list species) D S _____
- No usable habitat D S _____

iii. **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 and Rating	---	---	.7 (M)	---	---	---	---

If documented, list the source (e.g., observations, records, etc.): Observed 1 frog in 2004.

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 appropriate AA attributes 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)	<input type="checkbox"/> High								<input checked="" type="checkbox"/> Moderate								<input type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input checked="" type="checkbox"/> Uneven				<input type="checkbox"/> 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** (Using 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)			
	<input type="checkbox"/> Exceptional	<input checked="" type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	--	--
Moderate	--	.7 (M)	--	--
Low	--	--	--	--

Comments: The surrounding upland and stream corridor is prime habitat for deer and migratory birds. CEWA flock foraging in both cells and using Scirpus to perch on.

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, 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 pick the exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of Surface Water in AA	<input type="checkbox"/> Permanent/Perennial			<input type="checkbox"/> Seasonal / Intermittent			<input type="checkbox"/> 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 pick 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)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> 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 flooded from in-channel or overbank flow, check NA above.

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	<input type="checkbox"/> ≥ 10 acres			<input type="checkbox"/> <10, >2 acres			<input checked="" type="checkbox"/> ≤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	--	--	--	--	--	--	--	--	.2 (L)
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: _____

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, 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.)

Abbreviations: 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.	<input type="checkbox"/> >5 acre feet			<input checked="" type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤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	--	--	--	--	.6 (M)	--	--	--	--
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 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.			
	<input type="checkbox"/> ≥ 70%		<input checked="" type="checkbox"/> < 70%		<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
Evidence of flooding or ponding in AA	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
AA contains no or restricted outlet	--	--	.7 (M)	--	--	--	--	--
AA contains unrestricted outlet	--	--	--	--	--	--	--	--

Comments: _____

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, 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		
	<input type="checkbox"/> Permanent / Perennial	<input checked="" type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	--	.9 (H)	--
35-64 %	--	--	--
< 35 %	--	--	--

Comments:

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	<input type="checkbox"/> Vegetated component >5 acres						<input type="checkbox"/> Vegetated component 1-5 acres						<input checked="" type="checkbox"/> Vegetated component <1 acre					
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input checked="" type="checkbox"/> Moderate		<input type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.5M	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments:

14J. GROUNDWATER DISCHARGE/RECHARGE (D/R) (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 slopes.
- Seeps are present at the wetland edge.
- AA permanently flooded during drought periods.
- Wetland contains an outlet, but no inlet.
- Other

ii. **Recharge Indicators**

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

iii. **Rating:** Use the 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.		
	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
Estimated Relative Abundance from #11									
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)		
	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High
Public ownership	1(H)	--	--
Private ownership	--	--	--

Comments: wetland plant study; diversity increasing

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	L	0.00	1	
B. MT Natural Heritage Program Species Habitat	M	0.70	1	
C. General Wildlife Habitat	M	0.7	1	
D. General Fish/Aquatic Habitat	NA		--	
E. Flood Attenuation	L	0.20	1	
F. Short and Long Term Surface Water Storage	M	0.60	1	
G. Sediment/Nutrient/Toxicant Removal	M	0.70	1	
H. Sediment/Shoreline Stabilization	H	0.90	1	
I. Production Export/Food Chain Support	M	0.50	1	
J. Groundwater Discharge/Recharge	H	1.00	1	
K. Uniqueness	M	0.40	1	
L. Recreation/Education Potential	H	1.00	1	
Totals:		6.70	11.00	
Percent of Total Possible Points:			61% (Actual / Possible) x 100 [rd to nearest whole #]	

<p>Category I Wetland: (Must satisfy one of the following criteria. If not proceed to Category II.)</p> <p><input type="checkbox"/> Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or</p> <p><input type="checkbox"/> Score of 1 functional point for Uniqueness; or</p> <p><input type="checkbox"/> Score of 1 functional point for Flood Attenuation and answer to Question 14E(ii) is "yes"; or</p> <p><input type="checkbox"/> Percent of total Possible Points is > 80%.</p>
<p>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.)</p> <p><input type="checkbox"/> Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or</p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Wildlife Habitat; or</p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Fish/Aquatic Habitat; or</p> <p><input type="checkbox"/> "High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish / Aquatic Habitat; or</p> <p><input type="checkbox"/> Score of .9 functional point for Uniqueness; or</p> <p><input type="checkbox"/> Percent of total possible points is > 65%.</p>
<p><input checked="" type="checkbox"/> Category III Wetland: (Criteria for Categories I, II, or IV not satisfied.)</p>
<p>Category IV Wetland: (Criteria for Categories I or II are not satisfied and <u>all</u> of the following criteria are met; If not satisfied, proceed to Category III.)</p> <p><input type="checkbox"/> "Low" rating for Uniqueness; and</p> <p><input type="checkbox"/> "Low" rating for Production Export / Food Chain Support; and</p> <p><input type="checkbox"/> Percent of total possible points is < 30%.</p>

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

I
 II
 III
 IV

Table 4: Summary of 1999¹, 2002-2003 Wetland Function/Value Ratings and Functional Points at the Lame Deer-East Mitigation Sites

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	1999 ¹	2002	2003 School Site	2003 W-369	2003 W-380
Listed/Proposed T&E Species Habitat	Low (.3)	Low (0)	Low (0)	Low (0)	Low (0)
MNHP Species Habitat	Low (0)	Low (0)	Low (0)	Low (0)	High (.8)
General Wildlife Habitat	High (.7)	Moderate (.5)	Moderate (.5)	High (.8)	High (.8)
General Fish/Aquatic Habitat	NA	NA	NA	Moderate (.6)	Moderate (.6)
Flood Attenuation	Moderate (.4) ²	Low (.2)	Low (.2)	Low (.1)	Low (.1)
Short and Long Term Surface Water Storage	-	Moderate (.6)	Moderate (.6)	Moderate (.4)	Moderate (.4)
Sediment, Nutrient, Toxicant Removal	High (1)	Moderate (.7)	Moderate (.7)	Moderate (.6)	Moderate (.6)
Sediment/Shoreline Stabilization	Moderate (.7)	NA	NA	Low (.3)	Low (.3)
Production Export/Food Chain Support	High (.8)	Moderate (.5)	Moderate (.5)	Moderate (.6)	Moderate (.6)
Groundwater Discharge/Recharge	NA	High (1)	High (1)	High (1)	NA
Uniqueness	Moderate (.5)	Low (.3)	Low (.3)	Low (.3)	Low (.3)
Recreation/Education Potential	Moderate (.5)	Low (.1)	Moderate (.5)	High (1)	High (1.0)
Actual Points/Possible Points	4.9/9	3.9/10	4.3/10	5.7/12	5.5/11
% of Possible Score Achieved	54%	39%	43%	48%	50%
Overall Category	III	III	III	III	III
Total Acreage of Assessed Wetlands within Monitoring Area	20-30	0.15	0.47 ³	0.57	0.23
Total Functional Units (acreage x actual points)	-	0.58	2.02	(Max) 3.25	1.27
Net Acreage Gain ("new" wetlands)	-	0.15	0.47 ³	0.57	0.23
Net Functional Unit Gain (new acreage x actual points)	-	0.58	2.02	(Max) 3.25	1.27
Total Functional Unit Gain Lame Deer-East Mitigation Site (2003)			6.54 ³		

¹ FA done on general area in 1999, and includes the area cells 1 and 2 are currently located.

² Flood attenuation and short and long term storage were combined as one variable on the 1999 form.

³ Acreage in 2003 was overestimated at 0.84 acre, corrected to true 2003 acreage of 0.47.

Table 4a: Summary 2004 wetland function/value ratings and functional points at the Lame Deer-East Mitigation Sites.

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	2004 School Site	2004 W-369	2004 W-380
Listed/Proposed T&E Species Habitat	Low (0)	Low (0)	Low (0)
MNHP Species Habitat	Moderate (.7)	Low (0)	High (.8)
General Wildlife Habitat	Moderate (.7)	High (.9)	High (.9)
General Fish/Aquatic Habitat	NA	Moderate (.6)	High (.8)
Flood Attenuation	Low (.2)	Low (.2)	Low (.1)
Short and Long Term Surface Water Storage	Moderate (.6)	Moderate (.4)	Moderate (.4)
Sediment, Nutrient, Toxicant Removal	Moderate (.7)	Moderate (.7)	Moderate (.6)
Sediment/Shoreline Stabilization	High (.9)	Low (.3)	High (1.0)
Production Export/Food Chain Support	Low (.3)	Moderate (.4)	Moderate (.4)
Groundwater Discharge/Recharge	High (1)	High (1)	High (1)
Uniqueness	Mod (.4)	Mod (.4)	Mod (.4)
Recreation/Education Potential	Mod. (.5)	High (1)	High (1.0)
Actual Points/Possible Points	6.0/11	5.9/12	7.4/12
% of Possible Score Achieved	55%	49%	62%
Overall Category	III	II	II
Total Acreage of Assessed Wetlands within Monitoring Area	0.62	0.57	0.30
Total Functional Units (acreage x actual points)	3.72	(Max) 3.36	2.22
Net Acreage Gain ("new" wetlands)	0.62	0.57	0.30
Net Functional Unit Gain (new acreage x actual points)	3.72	(Max) 3.36	2.22
Total Functional Unit Gain Lame Deer-East Mitigation Sites (2004)	9.3		

Appendix C

SCHOOL MITIGATION SITE: REPRESENTATIVE PHOTOGRAPHS

*MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer, Montana*

LAME DEER SCHOOL MITIGATION SITE 2005



Location: A **Description:** South Cell wetland view, border **Compass Reading:** 170°



Location: B **Description:** South Cell wetland view, center **Compass Reading:** 130°



Location: C **Description:** South Cell wetland view, border **Compass Reading:** 76°



Location: D **Description:** Across dike from South Cell toward school **Compass Reading:** 290°



Location: E **Description:** Across dike from South Cell toward north cell **Compass Reading:** 17°



Location: F **Description:** From storm culvert across south cell **Compass Reading:** 130

LAME DEER SCHOOL MITIGATION SITE 2005



Location: G **Description:** South cell, beginning of transect **Compass Reading:** 130°



Location: H **Description:** South cell, end of transect **Compass Reading:** 210°



Location: I **Description:** North Cell view from central dike toward 212 stop sign **Compass Reading:** 16°



Location: J **Description:** North Cell view toward creek **Compass Reading:** 314°



Location: K **Description:** North Cell, vegetation along north side of dike **Compass Reading:** 44°



Location: L **Description:** North Cell, vegetation east of road and north of dike **Compass Reading:** 18°

LAME DEER SCHOOL MITIGATION SITE 2005



Location: M **Description:** North Cell south transect end **Compass Reading:** 358°



Location: N **Description:** North Cell, view south from south transect end **Compass Reading:** 290°



Location: O **Description:** North Cell, north transect end **Compass Reading:** 174°



Location: P **Description:** North Cell, view south **Compass Reading:** 100°



Location: Q **Description:** View inside North Cell

Appendix D

**1999 GRADING AND PLANTING PLANS, SCHOOL RESERVE
MITIGATION SITE**

MARTIN LETTER: SANITARY SEWER LINE

**CARTER-BURGESS LETTER PERTAINING TO WETLAND
MITIGATION ACREAGE**

RECREATED HWY. 212 WETLANDS WETLAND SITE PLANS

*MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer, Montana*

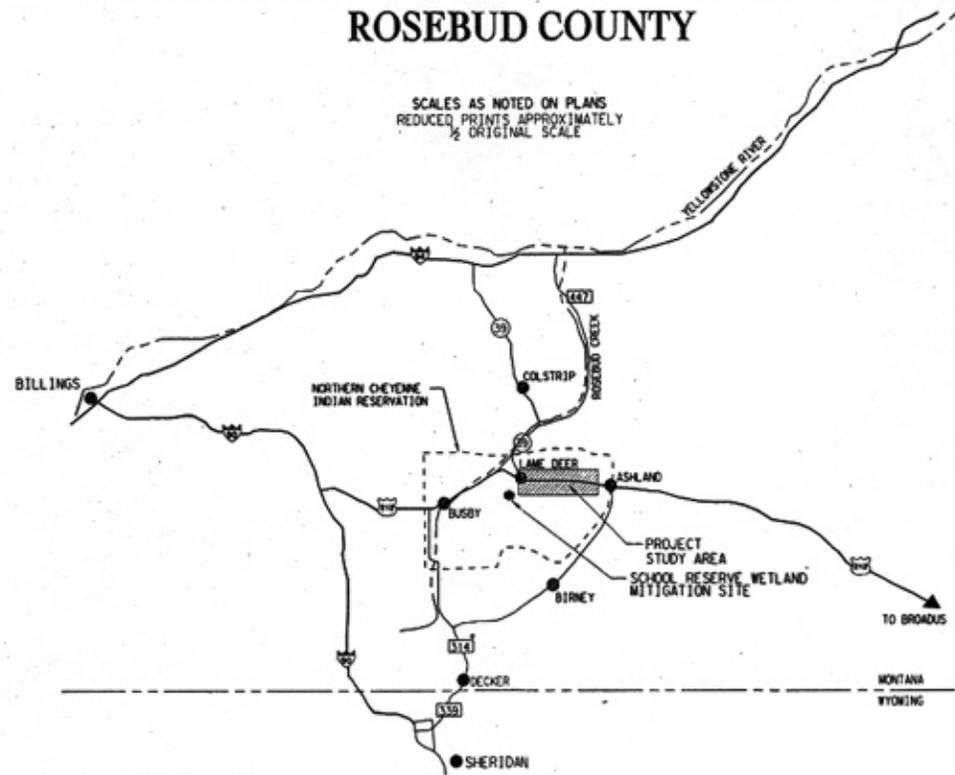
MONTANA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT NO. NH37-2(16)42, NH37-2(17)49. LAME DEER-EAST AND EAST OF LAME-DEER-EAST. SCHOOL RESERVE WETLAND MITIGATION SITE ROSEBUD COUNTY



PRELIMINARY - FOR REVIEW
FINAL PLANS

SCALES AS NOTED ON PLANS
REDUCED PRINTS APPROXIMATELY
1/2 ORIGINAL SCALE



PLANS PREPARED BY

Carter-Burgess

216 SIXTEENTH STREET HALL, SUITE 1700
DENVER, COLORADO 80202
(303) 620-5240

RELATED PROJECTS

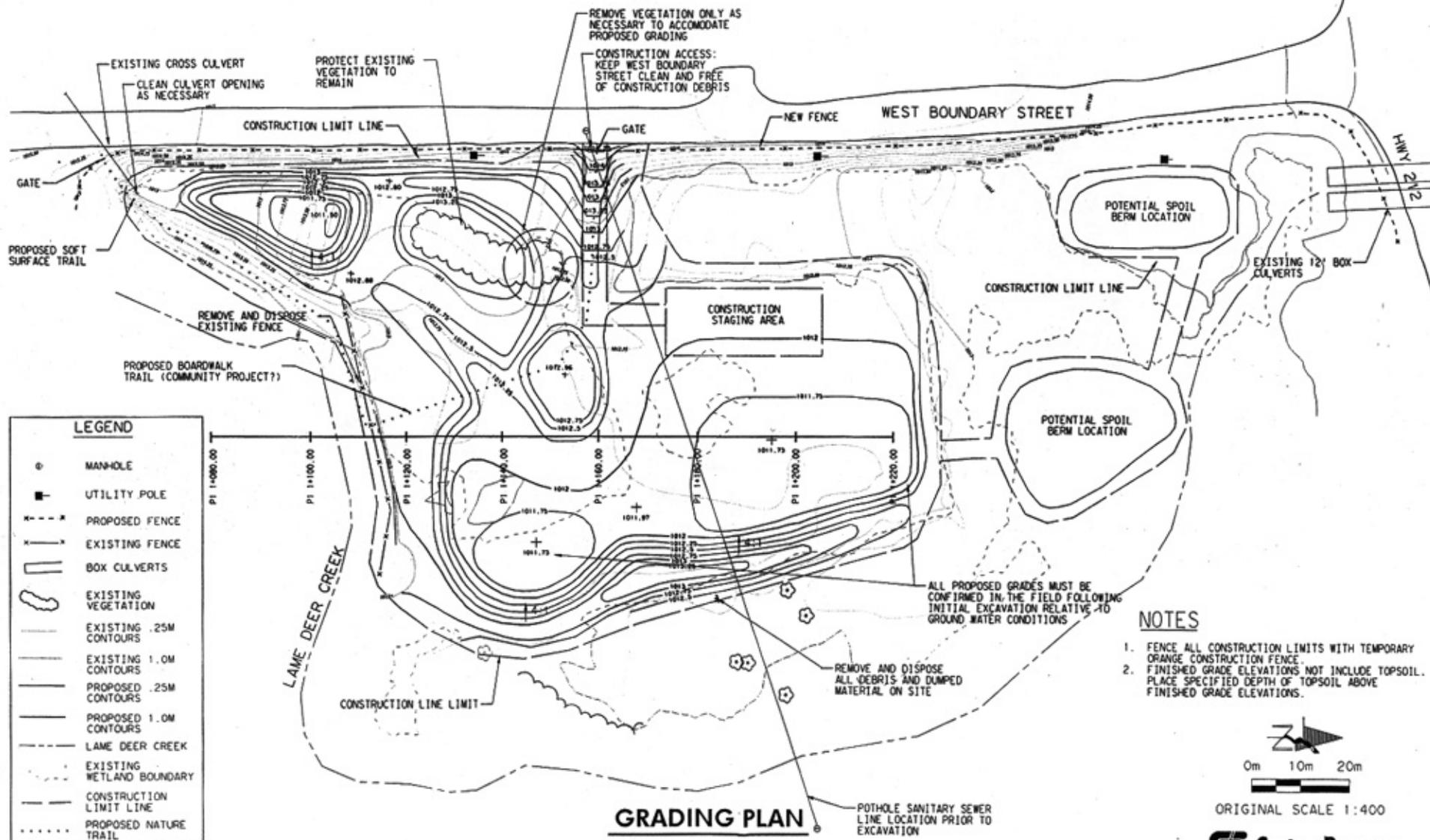
LAME DEER-EAST AND EAST OF
LAME DEER-EAST ROAD
IMPROVEMENTS
RP (MP) 42.1 TO 54.3

MONTANA DEPARTMENT OF TRANSPORTATION	
APPROVED: _____ 19 ____	
MARVIN DYE DIRECTOR OF TRANSPORTATION	
BY: _____	
PRECONSTRUCTION ENGINEER	
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED: _____	
DIVISION ADMINISTRATOR	DATE _____

ITEM	UNITS	QUANTITY
AREA OF WETLAND MITIGATION	ACRES (HECTARES)	1.79 (.06)

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	MD7-211642, MD7-211749	7

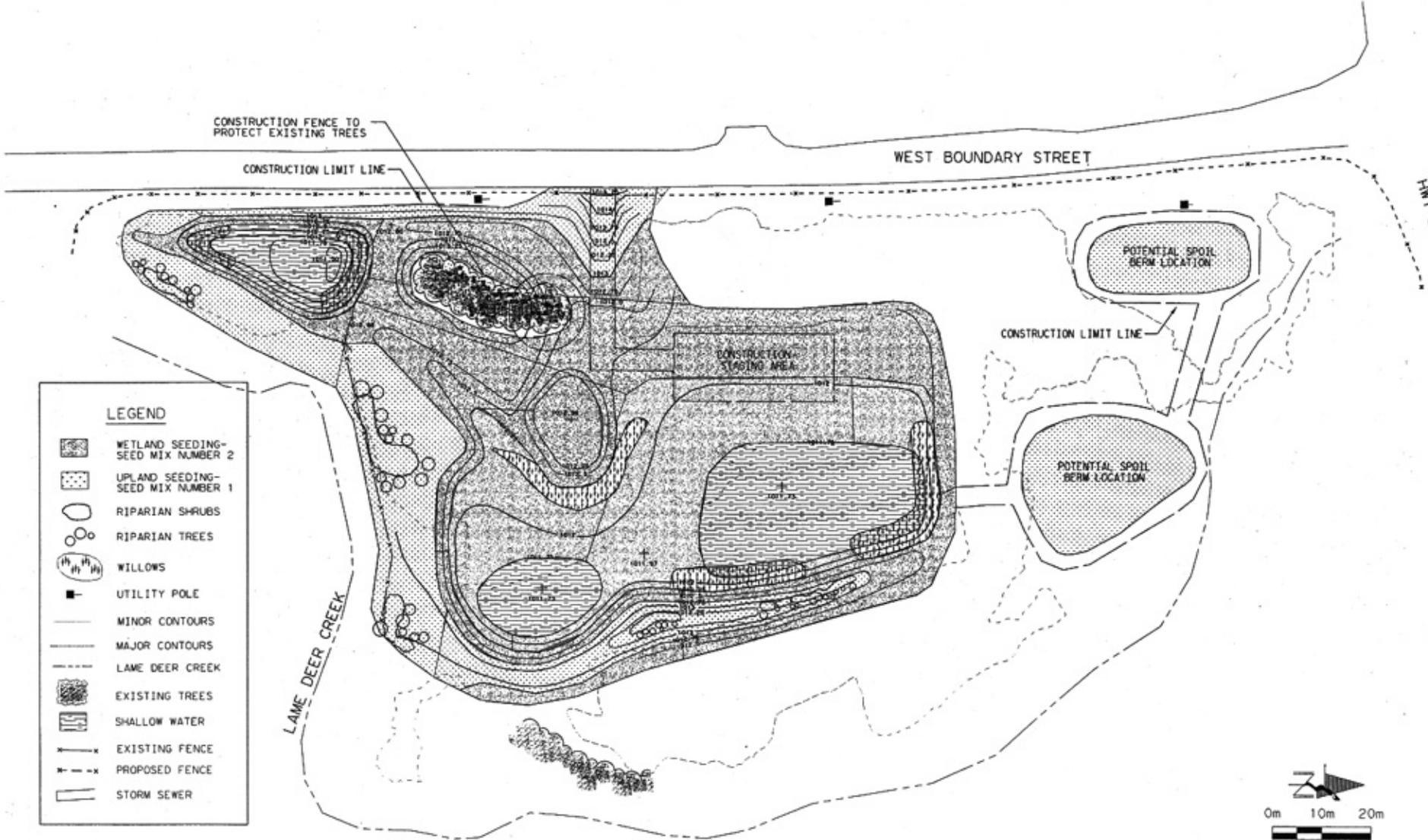
LAND & WATER D-2



MONTANA DEPARTMENT OF TRANSPORTATION

ITEM	UNITS	QUANTITY
AREA OF WETLAND MITIGATION	ACRES (HECTARES)	1.79 (.06)

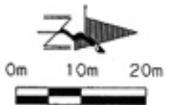
STATE	PROJECT NUMBER	SHEET NO.
MONTANA	MS7-2116142, MS7-2117149	9



LEGEND

	WETLAND SEEDING- SEED MIX NUMBER 2
	UPLAND SEEDING- SEED MIX NUMBER 1
	RIPARIAN SHRUBS
	RIPARIAN TREES
	WILLOWS
	UTILITY POLE
	MINOR CONTOURS
	MAJOR CONTOURS
	LAME DEER CREEK
	EXISTING TREES
	SHALLOW WATER
	EXISTING FENCE
	PROPOSED FENCE
	STORM SEWER

PLANTING PLAN



ORIGINAL SCALE 1:400

Montana Department of Transportation
P.O. Box 460
Miles City MT 59301



March 16, 2001

David Milligan
Environmental Protection Department
Northern Cheyenne Tribe

RECEIVED

MAR 19 2001

ENVIRONMENTAL

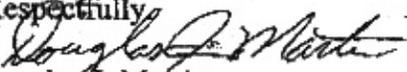
Subject: NH 37-2(16)42F
Lame Deer-East
Lame Deer Wetland Site

Due to concerns from the Northern Cheyenne's Utility Department, further survey work was done at the subject site to determine cover for the sanitary sewer line running through the wetland. This survey led to the discovery that no cut could be made over the existing sewer line due to freeze and thaw causing future breaks. Department project personnel redesigned this area to leave a 6 meter wide area at existing elevation over the existing sewer. In addition a 6:1 slope is to be built from this area down to plan elevations of the wetland on both sides of the existing sewer line.

At this time, no other changes will be made to the designed wetland site. With no fill being placed over the sewer line, a good chance exists that no substantial acreage will be lost, as the soil over the line will be wet and seeded as per contract plans.

If you have any questions, please contact me.

Respectfully,


Douglas J. Martin
Engineering Project Manager

Cc: Project File
Dist. Construction File
Terry Yarger
Larry Sickerson
Riverside Contracting Inc.

DJM: jj



Carter & Burgess

Consultants in Planning, Engineering, Architecture,
Construction Management, and Related Services

January 19, 2000

Mr. Paul Ferry
Montana Department of Transportation
2701 Prospect Avenue
Helena, MT 59620-1001

RE: Lame Deer East
NH 37-2 (16) 42
Control No. 0874

cc: G. Stock
J. Man
B. Bro
T. Att
L. Lind
S. Altho
L. Sickerson
File (only)

Dear Paul:

Please find attached our final plans submittal for the Lame Deer-East project. We have incorporated the comments and direction received from recent e-mails from Larry Sickerson, Ray Mengel, Todd Tillinger and you, in addition to comments received from the P-I-H meeting.

- 1) I contacted the NCT regarding the seed mix content and ratios and Desi Roleffson had already gone back to Washington, D.C. Phil Johnson had given me direction to raise the Great Basin Wild Rye to (9.5) kgs. per hectare.
- 2) I was able to locate some information on the water (tap?) from the NCT utilities. (see attached. It doesn't appear to be affected by the project's excavation. However, please review the attached to see if you agree with this assumption.
- 3) We have included a soft surface trail with crusher fines through the site. As directed by the Corps (Todd Tillinger), this quantity of surface area has been deleted from the total mitigation acreage. Direction is needed regarding a culvert crossing beneath the path at the drainage swale.
- 4) The mitigation acreage previously estimated will be reduced to 0.68 hectares (1.68 acres) due to the trail. This is information the Corps will be interested in. This roughly equates to 0.5 hectare (1.23 acres) of wetland creation and 0.18 hectare (0.45 acre) of restoration.
- 5) An outstanding issue was a staking plan. We have provided elevations on the cross-sections at every 20 meters from the centerline and at key elevation changes. Please advice if this is sufficient or another method is preferred.
- 6) While Todd Tillinger's response to the erosion control plan allowed that further coordination with the EPA may be required, we kept the erosion control item quantities in the plans as directed at the P-I-H meeting.

At this time, I think it is appropriate to re-iterate that Carter-Burgess staff and consultants have prepared these plans based on the information we had available. It is Carter-Burgess'

standard practice to design a wetland mitigation site, particularly creation sites, with multi-year studies on groundwater levels. In addition no information was available on the adjacent creek or culvert water levels or flow data for the Lane Deer-East project. We would like to recommend again that MDT or the contractor monitor the ground, culvert and creek water elevations and flow quantities on a bi-monthly basis throughout the next year and preferably two years. We have written on the plans that the contractor verify site conditions for ground and surface water levels. MDT could make this a requirement.

We recommend MDT have a wetland specialist on-site through construction to judge site conditions, make judgements on how to excavate, whether to dewater the site or not, modify the grading plans as needed, and determine where to plant the shrubs and sow seeds based on final site conditions.

We recommend the construction documents include a contractor's warrantee for the survival and establishment of all wetland plants (seeded or planted) for at least one year after construction is complete and accepted by MDT. In regards to the performance standards required by the Corps, we recommend to incorporate maximum flexibility. These should not specify the size of each wetland type (ie. Area of surface water, wet meadow or marsh). This allows MDT to change the planting plan in response to site conditions without having to change the grading or re-grade the site. I requested a copy of the performance standards from Larry Urban, but haven't received them yet.

It is our intent to provide MDT with the most successful product (plans) possible and hence, these recommendations. Please let me know if you have any comments on the plans or these recommendations.

Sincerely,



Diana Bell
Carter-Burgess

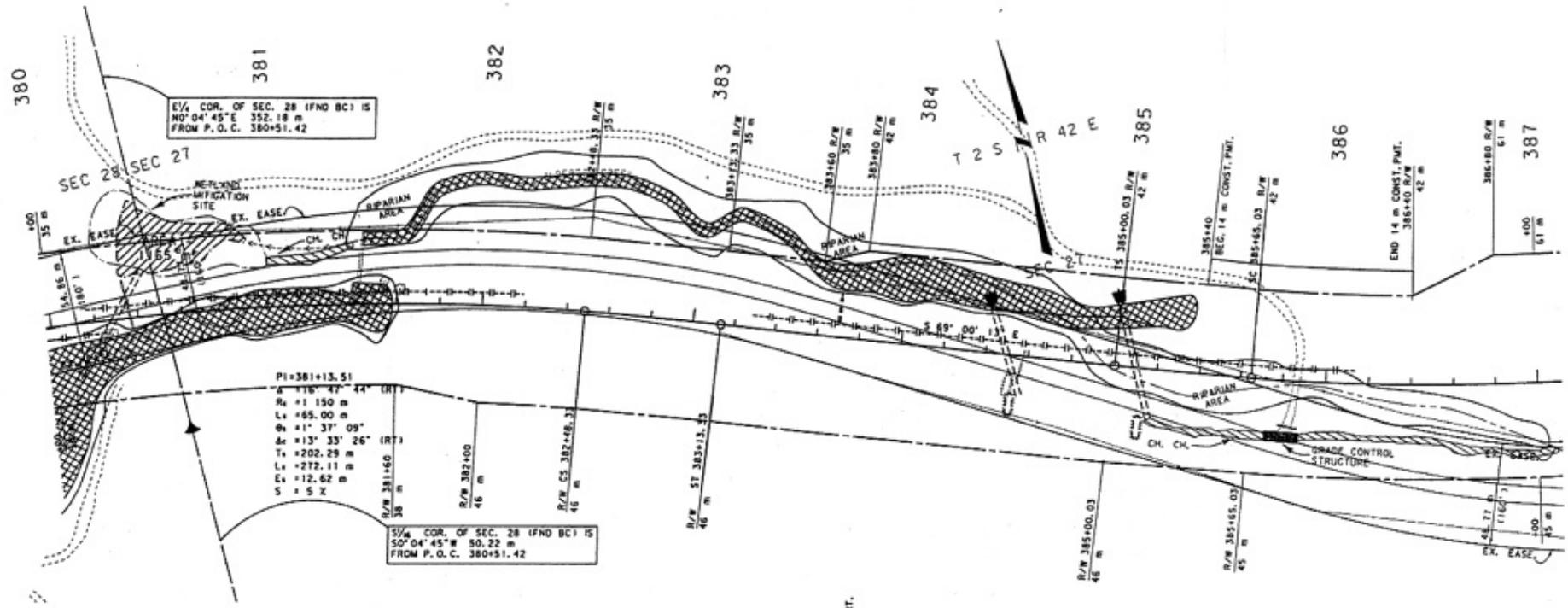
Attachments

cc. Larry Sickerson
Gordon Stockstad
Ray Mengel
Bill McChesney
Tom Atkins
Diane Yates
Chris Ricciardiello
Jeanette Lostracco
file

J:\97705901\Deer\manage\Corr\finalplans.doc

WETLAND
MAPPING
OF
MONTANA
CADD

0874eapn001.dgn



380+28
NEW 1350 mm DR.
SKEW 32° RT.

380+37
610 mm CMP - IN PL.
REMOVE

381+44
610 mm CMP - IN PL.
REMOVE

383+70
NEW 300 mm EMB PROTECTOR RT.

384+50
NEW 1050 mm DR.
SKEW 22° LT.

384+57
610 mm CMP - IN PL.
REMOVE

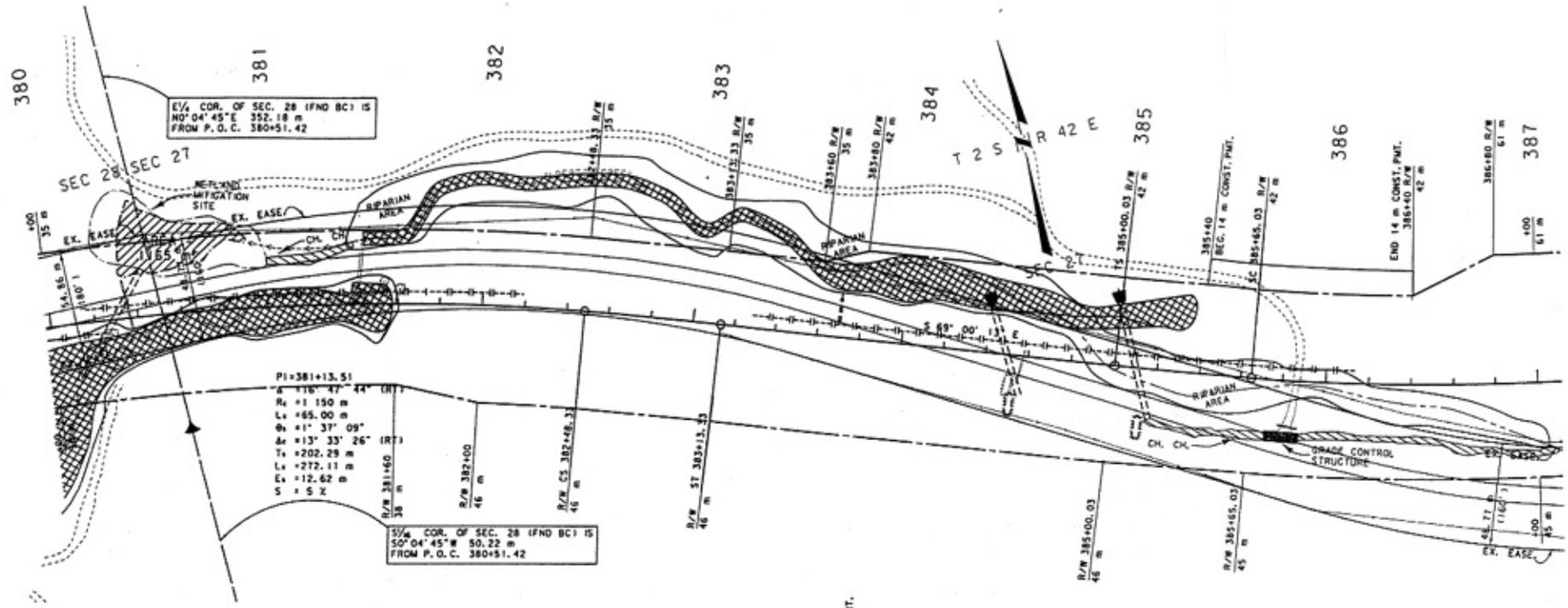
385+10
NEW 1050 mm DR.
SKEW 19° LT.

385+85
APP. PPE RT.
REMOVE

NO.	DATE	BY	DESCRIPTION
1	08/28/00
2	09/28/00

WETLAND
MAPPING
OF
MONTANA
CADD

0874eapn001.dgn



380+28
NEW 150 mm DR.
SKEW 32° RT.

380+37
610 mm CMP - IN PL.
REMOVE

381+44
610 mm CMP - IN PL.
REMOVE

383+70
NEW 300 mm EMB PROTECTOR RT.

384+50
NEW 150 mm DR.
SKEW 22° LT.

384+57
610 mm CMP - IN PL.
REMOVE

385+10
NEW 100 mm DR.
SKEW 19° LT.

385+85
APP. PPE RT.
REMOVE

NO.	DATE	BY	DESCRIPTION
1	08/28/00
2	09/28/00

Appendix E

BIRD SURVEY PROTOCOL GPS PROTOCOL

*MDT Wetland Mitigation Monitoring
Lame Deer - East Mitigation Site
Lame Deer, Montana*

BIRD SURVEY PROTOCOL

The following is an outline of the MDT Wetland Mitigation Site Monitoring Bird Survey Protocol. Though each site is vastly different, the bird survey data collection methods must be standardized to a certain degree to increase repeatability. An Area Search within a restricted time frame will be used to collect the following data: a bird species list, density, behavior, and habitat-type use. There will be some decisions that team members must make to fit the protocol to their particular site. Each of the following sections and the desired result describes the protocol established to reflect bird species use over time.

Species Use within the Mitigation Wetland: Survey Method

Result: To conduct a bird survey of the wetland mitigation site within a restricted period of time and the budget allotment.

Sites that can be circumambulated or walked throughout.

These types of sites will include ponds, enhanced historic river channels, wet meadows, and any area that can be surveyed from the entirety of its perimeter or walked throughout. If the wetland is not uncomfortably inundated, conduct several “meandering” transects through the site in an orderly fashion (record the number and approximate location/direction of the transects in the field notebook; they do not have to be formalized or staked). If a very small portion of the site cannot be crossed due to inundation, this method will also apply. Though the sizes of the site vary, each site will require surveying to the fullest extent possible within a set time limit. The optimum times to conduct the survey are in the morning hours. Conduct the survey from sunrise to no later than 11:00 AM. (Note: some sites may have to be surveyed in the late afternoon or evening due to time constraints or weather; if this is the case, record the time of day and include this information in your report discussion.) If the survey is completed before 11:00 AM and no additions are being made to the list, then the task is complete. The overall limiting factor regarding the number of hours that are spent conducting this survey is the number of budgeted hours; this determination must be made by site by each individual.

In many cases, binoculars will be the only instrument that is needed to identify and count the birds using the wetland. If the wetland includes deep water habitat that can not be assessed with binoculars, then a scope and tripod are necessary. If this is the case, establish as many lookout posts as necessary from key vantage points to collect the data. Depending on the size of the open water, more time may be spent viewing the mitigation area from these vantage points than is spent walking the peripheries of more shallow-water wetlands.

Sites that cannot be circumambulated.

These types of sites will include large-bodied waters, such as reservoirs, particularly those with deep water habitat (>6 ft) close to the shore and no wetland development in that area of the shoreline. If one area of the reservoir was graded in such a way to create or enhance the development of a wetland, then that will be the area in which the ambulatory bird survey is conducted. The team member must then determine the length of the shoreline that will be surveyed during each visit.



As stated above in the ambulatory site section, these large sites most likely will have to be surveyed from established vantage points.

Species Use within the Mitigation Wetland: Data Recording

Result: A complete list of bird species using the site, an estimate of bird densities and associated behaviors, and identification of habitat use.

1. Bird Species List

Record the bird species on the Bird Survey - Field Data Sheet using the appropriate 4-letter code of the common name. The coding uses the first two letters of the first two words of the birds' common name or if one name, the first four (4) letters. For example, mourning dove is coded MODO and mallard is MALL. If an unknown individual is observed, use the following protocol and define your abbreviation at the bottom of the field data sheet: unknown shorebird: UNSB; unknown brown bird (UNBR); unknown warbler (UNWA); unknown waterfowl (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 parentheses; do not fill in the habitat column. For example, a flock of black, medium-sized birds could be coded: UNBB / FO (25). You may also note on the data sheet if that particular individual is using a constructed nest box.

2. Bird Density

In the office, sum the Bird Survey – Field Data Sheet data by species and by behavior. Record this data in the Bird Summary Table.

3. Bird Behavior

Bird behavior must be identified by what is known. When a species is simply observed, the behavior that it is immediately exhibiting is what is recorded. Only behaviors that have discreet descriptive terms should be used. The following terms are recommended: breeding pair individual (BP); foraging (F); flyover (FO); loafing (L; e.g. sleeping, roosting, floating with head tucked under wing are loafing behaviors); and, nesting (N). If more behaviors are observed that do have a specific descriptive word, use them and we will add it to the protocol; descriptive words or phrases such as “migrating” or “living on site” are unknown behaviors.

4. Bird Species Habitat Use

We are interested in what bird species are using which particular habitat within the mitigation wetlands. This data is easily collected by simply recording what habitat the species was initially observed. Use the following broad category habitat classifications: aquatic bed (AB - rooted floating, floating-leaved, or submergent vegetation); forested (FO); marsh (MA – cattail, bulrush, emergent vegetation, etc. with surface water); open water (OW – primarily unvegetated); scrub-shrub (SS); and upland buffer (UP); wet meadow (WM – sedges, rushes, grasses with little to no surface water). If other categories are observed onsite that are not suggested here, we will make a new category next year.



GPS Mapping and Aerial Photo Referencing Procedure

The wetland boundaries, photograph location points and sampling locations were field located with mapping grade Trimble Geo III GPS units. The data was collected with a minimum of three positions per feature using Course/Acquisition code. The collected data was then transferred to a PC and differentially corrected to the nearest operating Community Base Station. The corrected data was then exported to ACAD drawings in Montana State Plain Coordinates NAD 83 international feet.

The GPS positions collected and processed had a 68% accuracy of 7 feet except in isolated areas of Tasks .008 and .011, where it went to 12 feet. This is within the 1 to 5 meter range listed as the expected accuracy of the mapping grade Trimble GPS.

Aerial reference points were used to position the aerial photographs. This positioning did not remove the distortion inherent in all photos; this imagery is to be used as a visual aide only. The located wetland boundaries were given a final review by the wetland biologist and adjustments were made if necessary.

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.



Appendix F

2005 RECREATED HWY 212 WETLANDS:

FIGURES 2 & 3

WETLAND DELINEATION FORMS

FUNCTIONAL ASSESSMENT FORMS

PHOTOGRAPH LOG RECREATED HWY 212 WETLANDS

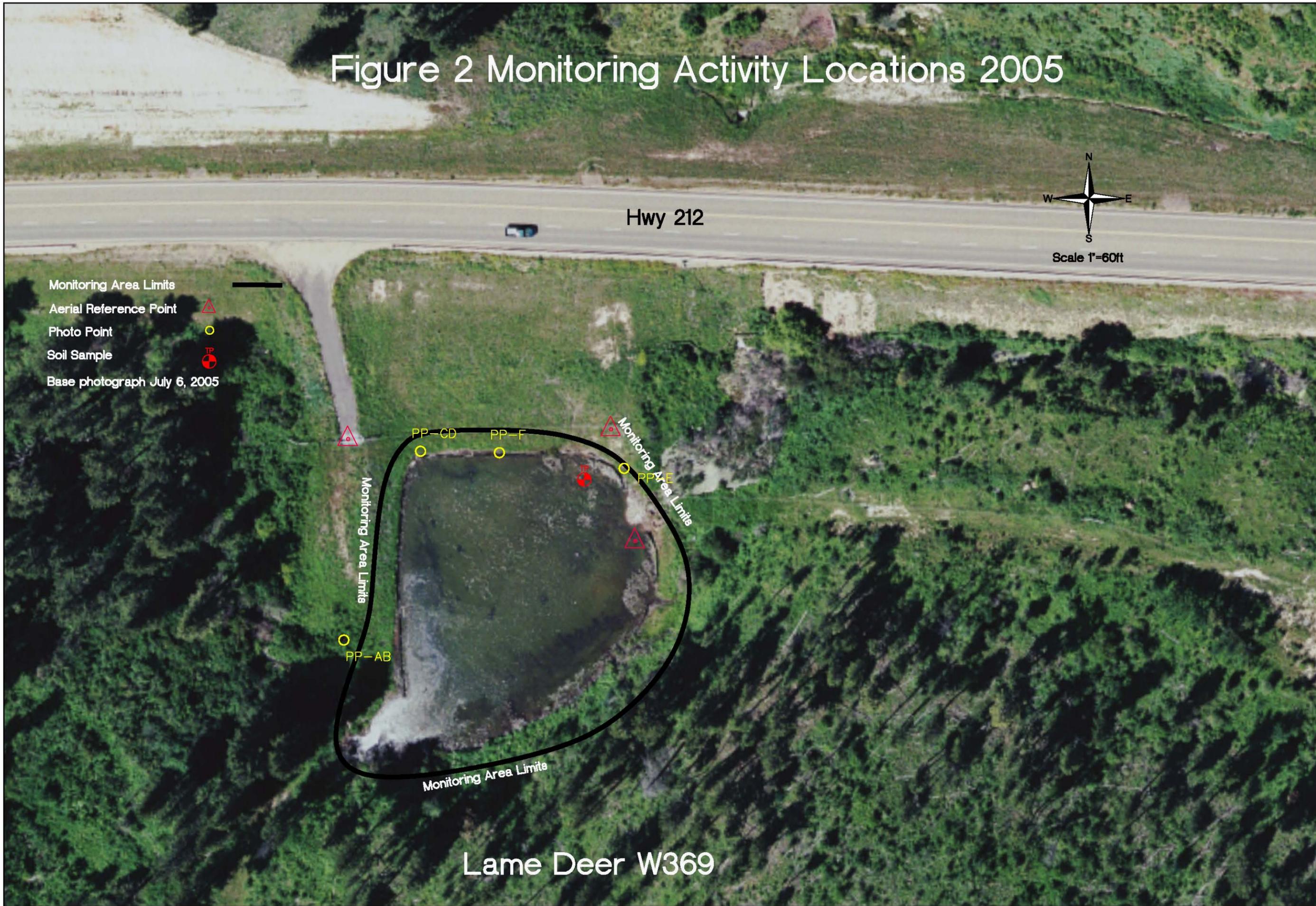
REPRESENTATIVE PHOTOGRAPHS

MDT Wetland Mitigation Monitoring

Lame Deer - East Mitigation Site

Lame Deer, Montana

Figure 2 Monitoring Activity Locations 2005



Monitoring Area Limits
 Aerial Reference Point
 Photo Point
 Soil Sample
 Base photograph July 6, 2005



PROJECT NAME MDT Lame Deer Wetland W369 Mitigation	
DRAWING TITLE Monitoring Activity Locations 2005	
PRJ NO: B45054.0410	DRAWN: SH
LOCATION: Lame Deer, MT	PROJ MGR: JB
SCALE: 1"=60'	CHECKED: LB / APPVD: JB
FILE NAME: 2005 BASE.dwg	
SHEET 2 OF 2	
REV 01 Nov/12/2005	

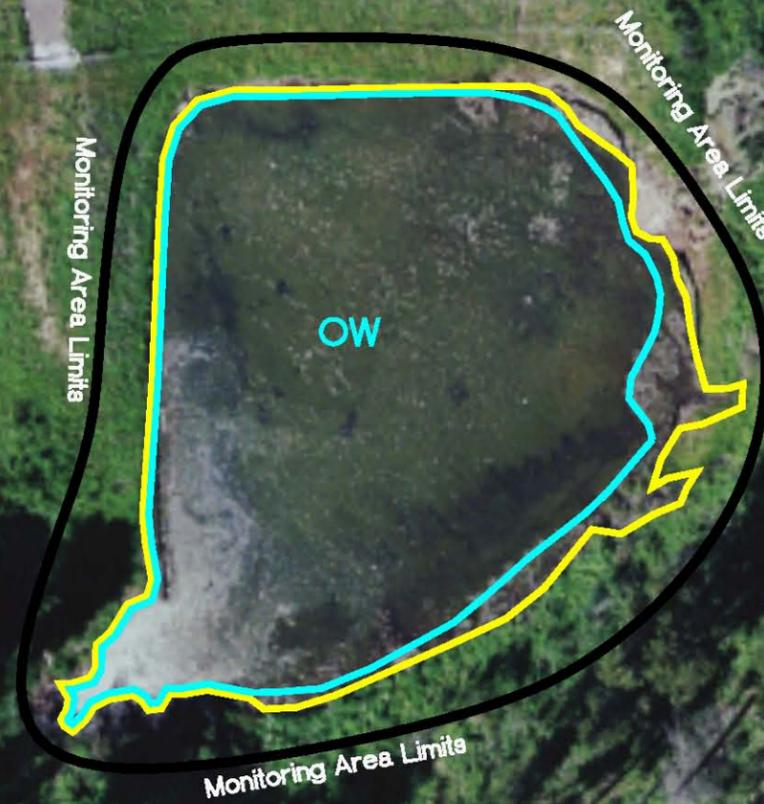
Lame Deer W369

Figure 3 - Mapped Site Features 2005

Hwy 212



- Monitoring Area Limits ——
- Estimated Wetland Boundary (Not by GPS) ——
- Open Water Boundary ——
- Base photograph July 6, 2005
- Gross Wetland Area 0.70 Acres
- Open Water 0.62 Acres
- Net Wetland Area 0.08 Acres



Lame Deer W369

PROJECT NAME

MDT Lame Deer Wetland W369 Mitigation

DRAWN: SH

PROJ MGR: JB

PRJ NO: B45054.0410

LOCATION: Lame Deer, MT

CHECKED: LB

APPVD: JB

SCALE: 1"=60'

FILE NAME: 2005 BASE.dwg

SHEET

3

REV 01

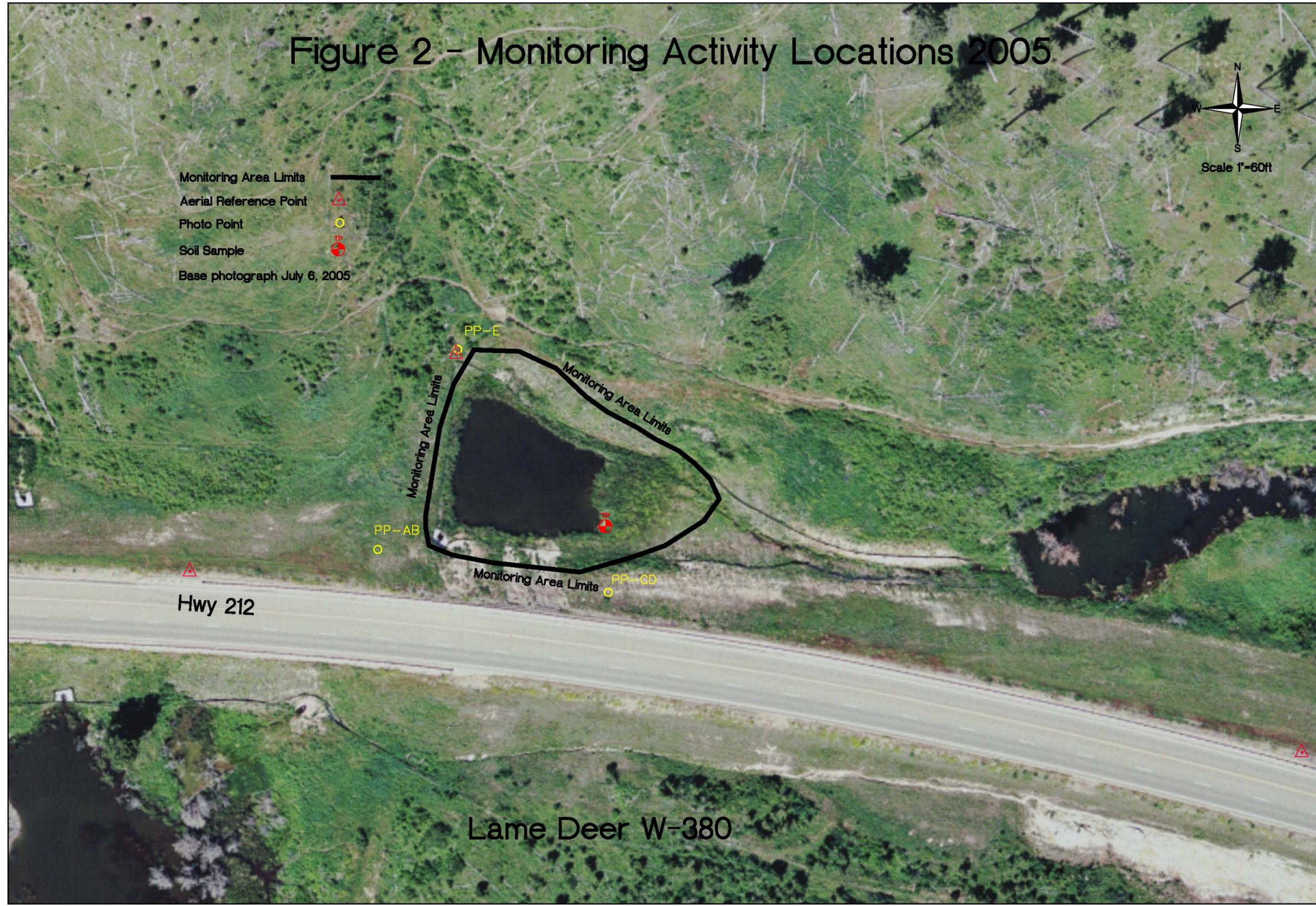
Nov/12/2005

DRAWING TITLE
Mapped Site Features 2005



Figure 2 - Monitoring Activity Locations 2005

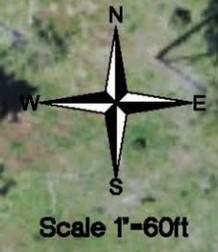
- Monitoring Area Limits 
- Aerial Reference Point 
- Photo Point 
- Soil Sample 
- Base photograph July 6, 2005



PROJECT NAME MDT Lame Deer Wetland W380 Mitigation	
DRAWING TITLE Monitoring Activity Locations 2005	
PRJ NO: B45054.0410	DRAWN: SH
LOCATION: Lame Deer, MT	PROJ MGR: JB
SCALE: 1"=60'	CHECKED: LB / APPVD: JB
FILE NAME: 2005 BASE.dwg	
	
SHEET 2 OF 09	
REV 01 Nov/12/2005	

Figure 3 - Mapped Site Features 2005

- Monitoring Area Limits
- Wetland Boundary (Not by GPS)
- Open Water Boundary
- Base photograph July 6, 2005
- Gross Wetland Area 0.36 Acres
- Open Water Area 0.17 Acres
- Net Wetland Area 0.20 Acres



Hwy 212

Lame Deer W-380

PROJECT NAME		MDT Lame Deer Wetland W380 Mitigation	
DRAWING TITLE		Mapped Site Features 2005	
PRJ NO: B45054.0410	DRAWN: SH	PROJ MGR: JB	CHECKED: LB / APPVD: JB
LOCATION: Lame Deer, MT	SCALE: 1"=60'	FILE NAME: 2005 BASE.dwg	
SHEET			
3			
REV 01			
Nov/12/2005			

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

Project/Site: <u>Lame Deer</u> Applicant/Owner: <u>MDT</u> Investigator: <u>LB/LWC</u>	Date: <u>7/26/05</u> County: <u>Rosebud</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>emergent</u> Transect ID: _____ Plot ID: <u>WL-369</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	TYPLAT	H	OBL	9		
2				10		
3				11		
4				12		
5				13		
6				14		
7				15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/1

WL veg community very small, most of basin is inundated. Stream channel is now split and the original channel and confluence area w/ pond is vegetating with WL species

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input checked="" type="checkbox"/> Drift Lines <input checked="" type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>-</u> (in.) Depth to Free Water in Pit: <u>0</u> (in.) Depth to Saturated Soil: <u>@</u> (in.) <u>surface</u>	
Remarks: Pond outlet nearly 100% blocked, about 20 GPM flowing through culvert and some flow occurring along side of culvert through soil. Flow also occurring over road and has washed out a section of road base. Open water extends to silt fence, < 1 foot saturated area along east/south/west sides of pond. North end with 10% wetland vegetation. Bank on north end continues to cave into pond as a result of ground water seep and a secondary channel from upper pond recently created by beaver.	

SOILS

Map Unit Name		Bitton-Shambo		Drainage	well
(Series and Phase):				Class:	
Taxonomy (Subgroup):				Field Observations	
				Confirm Mapped	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
				Type?	<input type="checkbox"/> <input type="checkbox"/>
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	10YR 2/1			Coarse red frags, silt sand clay
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Remarks:		
Area mostly comprised of open water, very little wetland vegetation (<1% of total area) because of excessive flooding as a result of outlet blockage.		

Approved by HQUSACE 2/92

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

Project/Site: <u>Lame Deer</u> Applicant/Owner: <u>MDT</u> Investigator: <u>LB/LWC</u>	Date: <u>7/26/05</u> County: <u>Rosebud</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u>X</u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u>X</u> No Is the area a potential Problem Area?: <u> </u> Yes <u>X</u> No (If needed, explain on reverse.)	Community ID: <u>emergent</u> Transect ID: <u> </u> Plot ID: <u>WL-380</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	JUNTEN	H	FAC	9	TYPLAT	H	OBL
2	JUNNOD	H	OBL	10	GLY sp.		OBL
3	SALBEB	S	FACW	11	CARLAN	H	OBL
4	SCIPAL	H	OBL	12	MEDLUP	H	FAC
5	CARHYS	H	OBL	13			
6	AGREXA	H	FACW	14			
7	CIRARV	H	FACU	15			
8	SCIACU	H	OBL	16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 12/12

Diversity increasing up drainage along creek edge.

HYDROLOGY

Recorded Data (Describe in Remarks): <u> </u> Stream, Lake, or Tide Gauge <u> </u> Aerial Photographs <u> </u> Other <u>X</u> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <u> </u> Inundated <u>X</u> Saturated in Upper 12 Inches <u>X</u> Water Marks <u> </u> Drift Lines <u> </u> Sediment Deposits <u> </u> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <u> </u> Oxidized Root Channels in Upper 12 Inches <u> </u> Water-Stained Leaves <u> </u> Local Soil Survey Data <u> </u> FAC-Neutral Test <u> </u> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> </u> - (in.) Depth to Free Water in Pit: <u>(filling)</u> (in.) Depth to Saturated Soil: <u>@ surface</u> (in.)	
Remarks: Circumference is saturated and is colonized w/ WL veg. Likely wetland won't expand along south west and east side, but may expand up-drainage.	

SOILS

Map Unit Name		Bitton-Shambo		Drainage	well
(Series and Phase):		_____		Class:	_____
Taxonomy (Subgroup):		_____		Field Observations	
				Confirm Mapped	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
				Type?	_____
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	B	10YR 2/1			Silt gravelly loam
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Remarks:			
Wetland fringe well developed and is likely fully expanded around pond circumference, but may still expand up-drainage along creek and to edge of steep slopes..			

Approved by HQUSACE 2/92

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
- 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 and Rating	---	---	---	---	---	---	0 (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 _____
- Incidental habitat (list species) D S _____
- No usable habitat D S _____

iii. **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 and Rating	---	---	---	---	---	---	0 (L)

If documented, list the source (e.g., observations, records, etc.): LIKELY THERE ARE NLEOPARD FROGS, BUT NOT OBSERVED TO DATE

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 appropriate AA attributes 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)	<input type="checkbox"/> High								<input checked="" type="checkbox"/> Moderate								<input type="checkbox"/> Low			
	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input checked="" type="checkbox"/> Uneven				<input type="checkbox"/> Even			
Class Cover Distribution (all vegetated classes)																				
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)	--	--	--	--	--	--	--	--	--	--	--	--	E	--	--	--	E	--	--	--
Moderate disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

iii. **Rating** (Using 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)			
	<input checked="" type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	--	--
Moderate	.9 (H)	--	--	--
Low	--	--	--	--

Comments: The surrounding upland and stream corridor is prime habitat for ungulates and migratory birds.

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, 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 pick the exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of Surface Water in AA	<input checked="" type="checkbox"/> Permanent/Perennial			<input type="checkbox"/> Seasonal / Intermittent			<input type="checkbox"/> 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.	--	M	--	--	--	--	--	--	--

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 pick 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)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	--	.6 (M)	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: BASS HAVE BEEN STOCKED IN THIS POND

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 flooded from in-channel or overbank flow, check NA above.

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	<input type="checkbox"/> ≥ 10 acres			<input type="checkbox"/> <10, >2 acres			<input checked="" type="checkbox"/> ≤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	--	--	--	--	--	--	--	--	.2 (L)
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: SHOULD have unrestricted outlet but culvert plugged.

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, 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.)

Abbreviations: 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.	<input type="checkbox"/> >5 acre feet			<input type="checkbox"/> <5, >1 acre feet			<input checked="" type="checkbox"/> ≤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	--	--	--	--	--	--	.4 (M)	--	--
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 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.			
	<input type="checkbox"/> ≥ 70%		<input checked="" type="checkbox"/> < 70%		<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
% cover of wetland vegetation in AA	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Evidence of flooding or ponding in AA	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
AA contains no or restricted outlet	--	--	.7 (M)	--	--	--	--	--
AA contains unrestricted outlet	--	--	--	--	--	--	--	--

Comments: outlet plugged by debris and beaver dam

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, 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		
	<input checked="" type="checkbox"/> Permanent / Perennial	<input type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	1 (H)	--	--
35-64 %	--	--	--
< 35 %	--	--	--

Comments:

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	<input type="checkbox"/> Vegetated component >5 acres				<input type="checkbox"/> Vegetated component 1-5 acres				<input checked="" type="checkbox"/> Vegetated component <1 acre						
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low				
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	
P/P	--	--	--	--	--	--	--	--	--	--	--	--	.6M	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments:

14J. GROUNDWATER DISCHARGE/RECHARGE (D/R) (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 slopes.
- Seeps are present at the wetland edge.
- AA permanently flooded during drought periods.
- Wetland contains an outlet, but no inlet.
- Other

ii. **Recharge Indicators**

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

iii. **Rating:** Use the 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	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> 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)	
	<input type="checkbox"/> Low	<input type="checkbox"/> High
Public ownership	--	--
Private ownership	--	--

Comments: Tribal member informed me that this area is fished.

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	L	0.00	1	
B. MT Natural Heritage Program Species Habitat	L	0.00	1	
C. General Wildlife Habitat	H	0.90	1	
D. General Fish/Aquatic Habitat	M	0.60	1	
E. Flood Attenuation	L	0.20	1	
F. Short and Long Term Surface Water Storage	M	0.40	1	
G. Sediment/Nutrient/Toxicant Removal	M	0.70	1	
H. Sediment/Shoreline Stabilization	H	1.00	1	
I. Production Export/Food Chain Support	M	0.60	1	
J. Groundwater Discharge/Recharge	H	1.00	1	
K. Uniqueness	M	0.4	1	
L. Recreation/Education Potential	H	1.00	1	
Totals:		6.80	12.00	
Percent of Total Possible Points:			56% (Actual / Possible) x 100 [rd to nearest whole #]	

<p>Category I Wetland: (Must satisfy one of the following criteria. If not proceed to Category II.)</p> <p><input type="checkbox"/> Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or</p> <p><input type="checkbox"/> Score of 1 functional point for Uniqueness; or</p> <p><input type="checkbox"/> Score of 1 functional point for Flood Attenuation and answer to Question 14E(ii) is "yes"; or</p> <p><input type="checkbox"/> Percent of total Possible Points is > 80%.</p>
<p>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.)</p> <p><input type="checkbox"/> Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or</p> <p><input checked="" type="checkbox"/> Score of .9 or 1 functional point for General Wildlife Habitat; or</p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Fish/Aquatic Habitat; or</p> <p><input type="checkbox"/> "High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish / Aquatic Habitat; or</p> <p><input type="checkbox"/> Score of .9 functional point for Uniqueness; or</p> <p><input type="checkbox"/> Percent of total possible points is > 65%.</p>
<p><input type="checkbox"/> Category III Wetland: (Criteria for Categories I, II, or IV not satisfied.)</p>
<p>Category IV Wetland: (Criteria for Categories I or II are not satisfied and <u>all</u> of the following criteria are met; If not satisfied, proceed to Category III.)</p> <p><input type="checkbox"/> "Low" rating for Uniqueness; and</p> <p><input type="checkbox"/> "Low" rating for Production Export / Food Chain Support; and</p> <p><input type="checkbox"/> Percent of total possible points is < 30%.</p>

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

I II III IV

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
- 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 and Rating	---	---	---	---	---	---	0 (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 Rana pipiens
- Secondary habitat (list species) D S _____
- Incidental habitat (list species) D S _____
- No usable habitat D S _____

iii. **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 and Rating	1 (H)	---	---	---	---	---	---

If documented, list the source (e.g., observations, records, etc.): Pond very active with different age-classes of Rana pipiens.

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 appropriate AA attributes 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)	<input type="checkbox"/> High								<input type="checkbox"/> Moderate								<input checked="" type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input checked="" type="checkbox"/> 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)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	E	--	--	--
Moderate disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

iii. **Rating** (Using 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)			
	<input checked="" type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	--	--
Moderate	.9 (H)	--	--	--
Low	--	--	--	--

Comments: The surrounding upland and stream corridor is prime habitat for ungulates and migratory birds.

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, 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 pick the exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of Surface Water in AA	<input checked="" type="checkbox"/> Permanent/Perennial			<input type="checkbox"/> Seasonal / Intermittent			<input type="checkbox"/> 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.	H	--	--	--	--	--	--	--	--

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 pick 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)			
	<input type="checkbox"/> Exceptional	<input checked="" type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	.8 (H)	--	--
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 flooded from in-channel or overbank flow, check NA above.

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	<input type="checkbox"/> ≥ 10 acres			<input type="checkbox"/> <10, >2 acres			<input checked="" type="checkbox"/> ≤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	--	--	--	--	--	--	--	--	--
AA contains unrestricted outlet	--	--	--	--	--	--	--	--	.1 (L)

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: _____

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, 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.)

Abbreviations: 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.	<input type="checkbox"/> >5 acre feet			<input type="checkbox"/> <5, >1 acre feet			<input checked="" type="checkbox"/> ≤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	--	--	--	--	--	--	.4 (M)	--	--
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 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.			
	<input type="checkbox"/> ≥ 70%		<input checked="" type="checkbox"/> < 70%		<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
Evidence of flooding or ponding in AA	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
AA contains no or restricted outlet	--	--	--	--	--	--	--	--
AA contains unrestricted outlet	--	--	.6 (M)	--	--	--	--	--

Comments: _____

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, 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		
	<input checked="" type="checkbox"/> Permanent / Perennial	<input type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	1 (H)	--	--
35-64 %	--	--	--
< 35 %	--	--	--

Comments:

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	<input type="checkbox"/> Vegetated component >5 acres				<input type="checkbox"/> Vegetated component 1-5 acres				<input checked="" type="checkbox"/> Vegetated component <1 acre			
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input checked="" type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
P/P	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--

Comments:

14J. GROUNDWATER DISCHARGE/RECHARGE (D/R) (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 slopes.
- Seeps are present at the wetland edge.
- AA permanently flooded during drought periods.
- Wetland contains an outlet, but no inlet.
- Other

ii. **Recharge Indicators**

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

iii. **Rating:** Use the 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: Seep noted upslope of WL and drains into pond..

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	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> 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)	
	<input type="checkbox"/> Low	<input type="checkbox"/> High
Public ownership	--	--
Private ownership	--	--

Comments: Tribal member informed me that this area is fished.

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	L	0.00	1	
B. MT Natural Heritage Program Species Habitat	H	1.00	1	
C. General Wildlife Habitat	H	0.90	1	
D. General Fish/Aquatic Habitat	H	0.80	1	
E. Flood Attenuation	L	0.10	1	
F. Short and Long Term Surface Water Storage	M	0.40	1	
G. Sediment/Nutrient/Toxicant Removal	M	0.60	1	
H. Sediment/Shoreline Stabilization	H	1.00	1	
I. Production Export/Food Chain Support	M	0.40	1	
J. Groundwater Discharge/Recharge	H	1.00	--	
K. Uniqueness	M	0.40	1	
L. Recreation/Education Potential	H	1.00	1	
Totals:		7.60	12.00	
Percent of Total Possible Points:			63% (Actual / Possible) x 100 [rd to nearest whole #]	

<p>Category I Wetland: (Must satisfy one of the following criteria. If not proceed to Category II.)</p> <p><input type="checkbox"/> Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or</p> <p><input type="checkbox"/> Score of 1 functional point for Uniqueness; or</p> <p><input type="checkbox"/> Score of 1 functional point for Flood Attenuation and answer to Question 14E(ii) is "yes"; or</p> <p><input type="checkbox"/> Percent of total Possible Points is > 80%.</p>
<p>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.)</p> <p><input type="checkbox"/> Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or</p> <p><input checked="" type="checkbox"/> Score of .9 or 1 functional point for General Wildlife Habitat; or</p> <p><input type="checkbox"/> Score of .9 or 1 functional point for General Fish/Aquatic Habitat; or</p> <p><input type="checkbox"/> "High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish / Aquatic Habitat; or</p> <p><input type="checkbox"/> Score of .9 functional point for Uniqueness; or</p> <p><input type="checkbox"/> Percent of total possible points is > 65%.</p>
<p><input type="checkbox"/> Category III Wetland: (Criteria for Categories I, II, or IV not satisfied.)</p>
<p>Category IV Wetland: (Criteria for Categories I or II are not satisfied and <u>all</u> of the following criteria are met; If not satisfied, proceed to Category III.)</p> <p><input type="checkbox"/> "Low" rating for Uniqueness; and</p> <p><input type="checkbox"/> "Low" rating for Production Export / Food Chain Support; and</p> <p><input type="checkbox"/> Percent of total possible points is < 30%.</p>

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

I II III IV

Highway 212 Wetlands PHOTOGRAPH LOG

Wetland #	Photo Location	Photograph Description	Compass Reading
369 ¹	A	wetland view toward inflow area	78
369	B	wetland view toward road	16
369	C	wetland view toward outflow from below road edge	124
369	D	wetland view toward upstream drainage	110
369	E	west side of wetland	268
369	F	toward inlets upstream	~110
369	extra	Bank collapse and sediment inflow	
380	A	inlet	86
380	B	intermittent drainage from east	48
380	C	inlet	10
380	D	outflow (left side in photo)	314
380	E	from east drainage to road and outlet-side of wetland	152

¹ The wetland number refers to the station number on the plan map (wetland 380 is higher in elevation and a greater distance from Lame Deer than 369 along Hwy. 212).

COMMENTS/PROBLEMS: Note erosion problems in Wetland 369. _____

Lame Deer Wetland 369 Mitigation Site 2005



Location: A **Description:** Wetland view toward inflow area
Compass Reading: 78°



Location: B **Description:** Wetland view toward road **Compass Reading:** 16°



Location: C **Description:** Wetland view toward outflow from below road edge **Compass Reading:** 124°



Location: D **Description:** Wetland view toward upstream drainage
Compass Reading: 110°

Lame Deer Wetland 369 Mitigation Site 2005



Location: E **Photo Frame:** 9A **Description:** West side of wetland **Compass Reading:** 268°



Location: F **Photo Frame:** 8A **Description:** Erosion issues below road edge **Compass Reading:** ~110



Location: extra **Description:** bank collapse and sediment plume at head of pond

LAME DEER WETLAND 380 MITIGATION SITE 2005



**Location: A Description: Inlet
Compass Reading: 86°**



**Location: B Description: Intermittent drainage from east
Compass Reading: 48°**



Location: C Description: Inlet Compass Reading: 10°



**Location: D Description: Outflow (left side in photo)
Compass Reading: 314°**



**Location: E Description: From east drainage to road and
outlet-side of wetland Compass Reading: 152°**