MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2007

Lame Deer - East Mitigation Sites
Lame Deer, Montana

Prepared for:

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

Prepared by:

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

December 2007

PBS&J Project No: B43088.00 - 0406

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1.0 INTRODUCTION

This annual report summarizes methods and results of the 2007 (sixth and final 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 Highway 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 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.

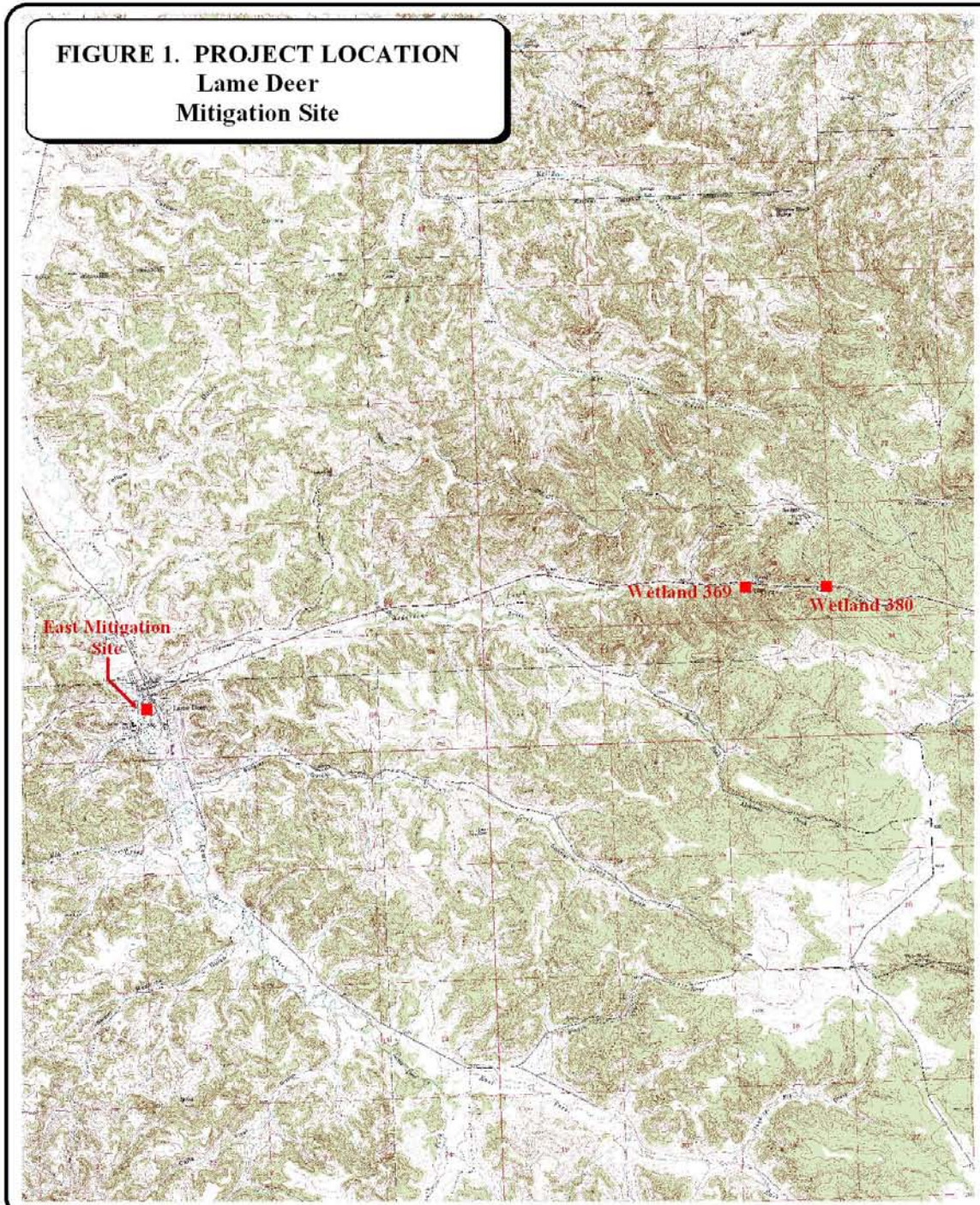
The Lame Deer - East monitoring site wetland (School Mitigation Site) was constructed in July/August 2001 within the historic floodplain of Lame Deer Creek; fill was historically placed within the current mitigation site to create a ball field for the school (**Figure 2** in **Appendix A**). The fill was removed to create and restore wetlands in the area; the original intent was to create 1.23 acres and restore 0.56 acre for a total of 1.79 acres.

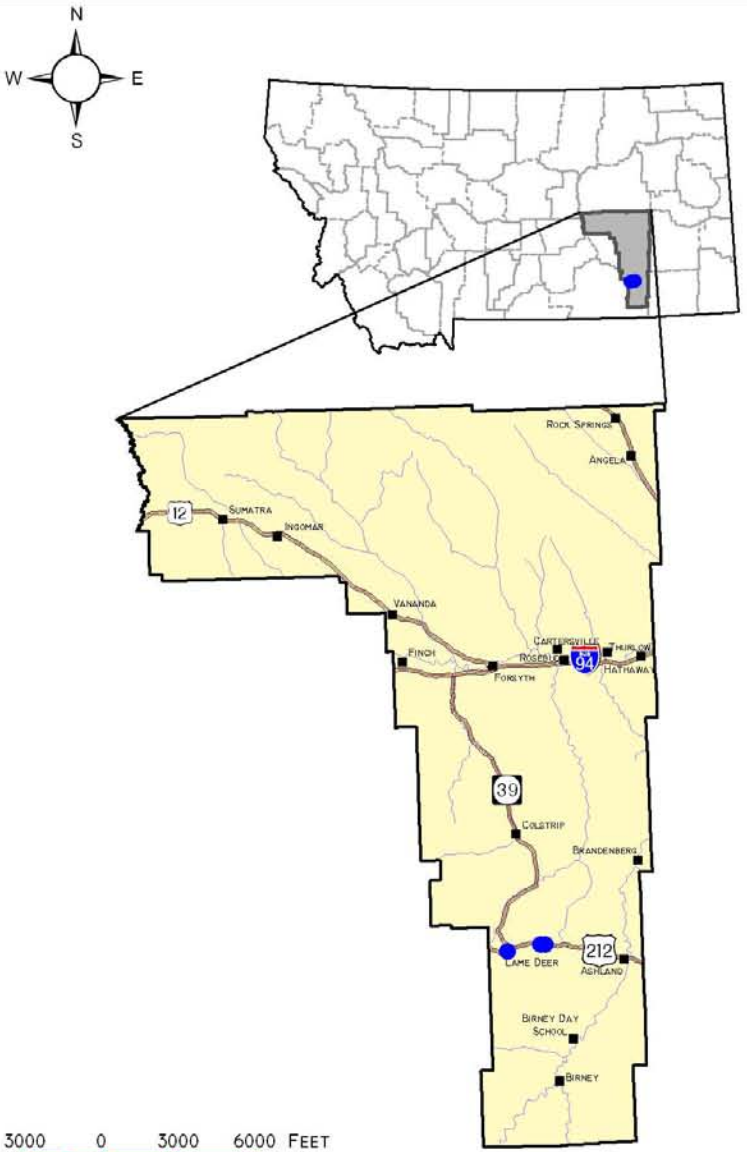
Several changes in the original grading plan (**Appendix D**) of the School Mitigation Site have occurred and thus affected the mitigation goal of 1.79 acres. A trail (0.1 acre) was constructed through the southwest side of the originally planned wetland, decreasing the mitigation acreage to 1.68 acres (1.23 acres creation and 0.45 acre restoration) (Bell 2000). In 2000, due to concerns regarding the presence of a sanitary sewer line through the wetland, MDT further redesigned the mitigation site to place fill over the line to protect from freeze and thaw problems (Martin 2001). A 6-meter wide area with a 6:1 slope was to be left at existing elevation over the sewer line; no adjustment to the mitigation acreage was performed at this time because it was assumed that this area would develop into wetlands. However, the sewer line overburden will not convert to wetland given the elevation of the deposition. The upland acreage resulting from the sewer line overburden is estimated as 0.2 acre.

Further adjustment to the goal is necessary based on physical area constraints. The original goal includes areas that are outside of the MDT-defined monitoring boundary and beyond the created south and north cells. These include the stormwater inlet swale southwest of the trail (0.4 acre), the willow-dominated area west of the north cell (0.1 acre), and small areas north and east of the north cell and east of the south cell (0.1 acre)**.** The adjusted mitigation wetland goal for the School Site within the monitoring area, accounting for all of the estimated adjustments, is 0.9 acre.

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 (**Figure 3** in **Appendix E**). The intent of these mitigation efforts was to recreate

FIGURE 1. PROJECT LOCATION
Lame Deer
Mitigation Site





3000 0 3000 6000 FEET

1: 100,000

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

approximately 1.5 acres of wetland (Harris 1999). Site plans are included in **Appendix D**. The total adjusted mitigation acreage goal is 2.4 acres, of which 0.9 acre (adjusted goal) was intended to be created at the school site and a total of 1.5 acres at the Highway 212 wetlands.

2.0 METHODS

2.1 Monitoring Dates and Activities

All three Lame Deer-East wetland mitigation sites were monitored on July 16, 2007. 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 Assessment Forms (**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; 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 E**). 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 COE Routine Wetland Delineation Data Form (**Appendix B**) at each wetland determination point. Precipitation data for January – July, 2007 were compared to the 1944-current average (WRCC 2007).

All additional hydrologic data were recorded on the school Wetland Mitigation Site Monitoring Form (**Appendix B**). The boundary between emergent vegetation and open water was mapped on the aerial photograph (**Figure 3** in **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** in **Appendix E**).

2.3 Vegetation

General vegetation types within the school mitigation site were delineated on an aerial photograph during the site visit (**Figure 3** in **Appendix A**). Coverage of the dominant species in each community type is listed on the Wetland Mitigation Site Monitoring Form (**Appendix B**). A comprehensive plant species list for the entire site was compiled. Woody species were planted at the school mitigation site, although original planting numbers are unknown. Survival was therefore qualitatively assessed.

A transect was established in each cell of the school mitigation site; the locations of the transects are shown on **Figure 2** in **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 each transect were taken from both ends during the site visit.

The vegetated wetland boundary at the Highway 212 recreated wetlands was mapped on aerial photographs and quantified (**Figure 3** in **Appendix E**).

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 E-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 E-Hwy. 212 Wetland Sites**). The wetland boundaries at the school mitigation site (**Figure 3** in **Appendix A**) and the recreated wetlands along Hwy. 212 (**Figure 3** in **Appendix E**) 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.

2.7 Birds

Bird observations were recorded during the site visit according to the established Bird Survey Protocol (**Appendix F**). A general, qualitative bird list has been compiled using these observations.

2.8 Macroinvertebrates

No macroinvertebrate samples are collected on the site.

2.9 Functional Assessment

A functional assessment form was completed in 2007 for all mitigation monitoring sites using the 1999 MDT Montana Wetland Assessment Method (Berglund 1999). 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 E**.

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** in **Appendix A.**

Photographs were also taken of the recreated wetlands east of Lame Deer along Hwy. 212 (**Appendix E**); photo logs of the recreated wetlands are also included in **Appendix E**. 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 F**). 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 2007.

2.12 Maintenance Needs

No bird boxes are located within this site. The inflow culvert for the school mitigation site and outflow structures for wetlands 380 and 369 were 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 0.9 acre (adjusted goal) 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 freeze and thaw; the sewer line overburden divided the originally designed wetland footprint into the two cells.

During the July 16, 2007 visit, shallow inundation (<1 foot) was observed within both cells of the School Mitigation site and saturation was noted to the edges of the wetland zone. Wetlands 369 and 380 were inundated. The outlet culvert in wetland 369 remains plugged with a beaver dam and likely sediment. In 2006 water was noted flowing under the 369 culvert. During the 2007 site visit, the downslope end of the culvert length was at least 50% exposed; this washout had likely occurred as a result of the flows undermining the culvert as reported in 2006.

Precipitation data for the Busby station indicate that the yearly average (1944-June 2007) is 8.18 inches (WRCC 2007); through the month of June 2007 the average precipitation was 13.32 inches or 162% of the average. During the month of May, 2007, 6.18 inches of precipitation occurred or 264% of the average.

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 vegetation communities defined on the monitoring form, however, as a result of community transitions and expansions, only five were mapped in 2006 (**Figure 3** in **Appendix A; 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 officinalis*; Type *6* - *Melilotus officinalis/Sonchus arvensis/Cirsium arvense;* Type 7 - *Scirpus pungens/Hordeum jubatum*; Type 8 - *Populus tremula/Salix exigua/Scirpus pungens*; and Type 9 - *Eleocharis palustris/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**). The sprigged willows are reaching heights of 5 feet and obligate species are proliferating in the south cell because of persistent inundation or saturation. The southwest corner of the south cell appears to be converting to wetland; the future potential wetland acreage gain from this area would be < 0.005 acre.

The transect within the north cell was established in 2002 (**Table 2b**). The shrub and tree canopy is increasing in percent cover and in height. There remains a narrow margin of upland (3-6 feet) along the southwest and north edges of the north cell that will in time convert to wetland if the saturated conditions persist. The potential maximum gain of wetland acreage around the north cell if saturated conditions persist is estimated as < 0.1 acre.

Table 1: ***2002-2007 School Mitigation Site vegetation species list.***

Scientific Name	Region 4 (North Plains) Wetland Indicator Status [1]
Agropyron spp.	FAC-FACU
Carex hystericina	OBL
Carex lanuginosa.	OBL
Carex praegracilis	FACW
Chenopodium hybridum/album	(FAC)
Cicuta douglasii (likely)	---
Cirseum arvense	FACU
Eleocharis palustris	OBL
Equisetum hyemale	FACW
Galium circaezans	---
Glyceria grandis	OBL
Glycyrrhiza lepidota	FACU
Hordeum jubatum	FACW
Juncus bufonius	OBL
Juncus torreyi	FACW
Kochia scoparia	FAC
Melilotus alba	FACU-
Melilotus officinalis	FACU-
Mentha arvensis	FACW
Pastinaca sativa	---
Populus tremula	FAC
Puccinellia distans	FACW
Puccinellia nuttalliana	OBL
Rumex crispus	FACW
Salix exigua (planted)	FACW+
Salix spp.	(FACW-OBL)
Scirpus acutus	OBL
Scirpus pallidus	OBL
Scirpus pungens	OBL
Sonchus arvensis	FAC
Trifolium spp.	(UPL)
Typha latifolia	OBL

[1] --- under status are species that are 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).

[1] Status that occur within parentheses are probable and based only on available botanical references and classifications for adjacent regions.

Wetland vegetation at W-369 is expanding into the shallow open water near 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. A one- to two foot wide strip of hydrophytic vegetation has colonized 50-75% of the pond circumference. The hydrophytic vegetation within the W-380 boundary increased into the open water during the 2006-2007 season and did not appreciably increase upslope around the perimeter of the site or adjacent to the stream inlet as seen in past years. Wetland acreage expansion along the inlet may take several more years for the saturation to effectively allow an increase in wetland species cover. Many volunteer willow seedlings were observed adjacent to the inlet wetland area.

Table 2a: ***2002-2007 Transect 1*** **(*South Cell*)** ***data summary.***

Monitoring Year	2002	2003	2004	2005	2006	2007
Transect Length (feet)	207	207	207	207	207	207
# Vegetation Community Transitions along Transect	3	3	0	0	0	0
# Vegetation Communities along Transect	3	3	1	1	1	1
# Hydrophytic Vegetation Communities along Transect	2	2	1	1	1	1
Total Vegetative Species	9	8	7	4*	6	6
Total Hydrophytic Species	6	5	6	4*	6	6
Total Upland Species	3	3	1	0	0	0
Estimated % Total Vegetative Cover	53	80	99	99	100	100
% Transect Length Comprised of Hydrophytic Vegetation Communities	29	90	100	100	100	100
% Transect Length Comprised of Upland Vegetation Communities	71	10	0	0	0	0
% Transect Length Comprised of Unvegetated Open Water	0	0	0	0	0	0
% Transect Length Comprised of Bare Substrate	0	0	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*).**

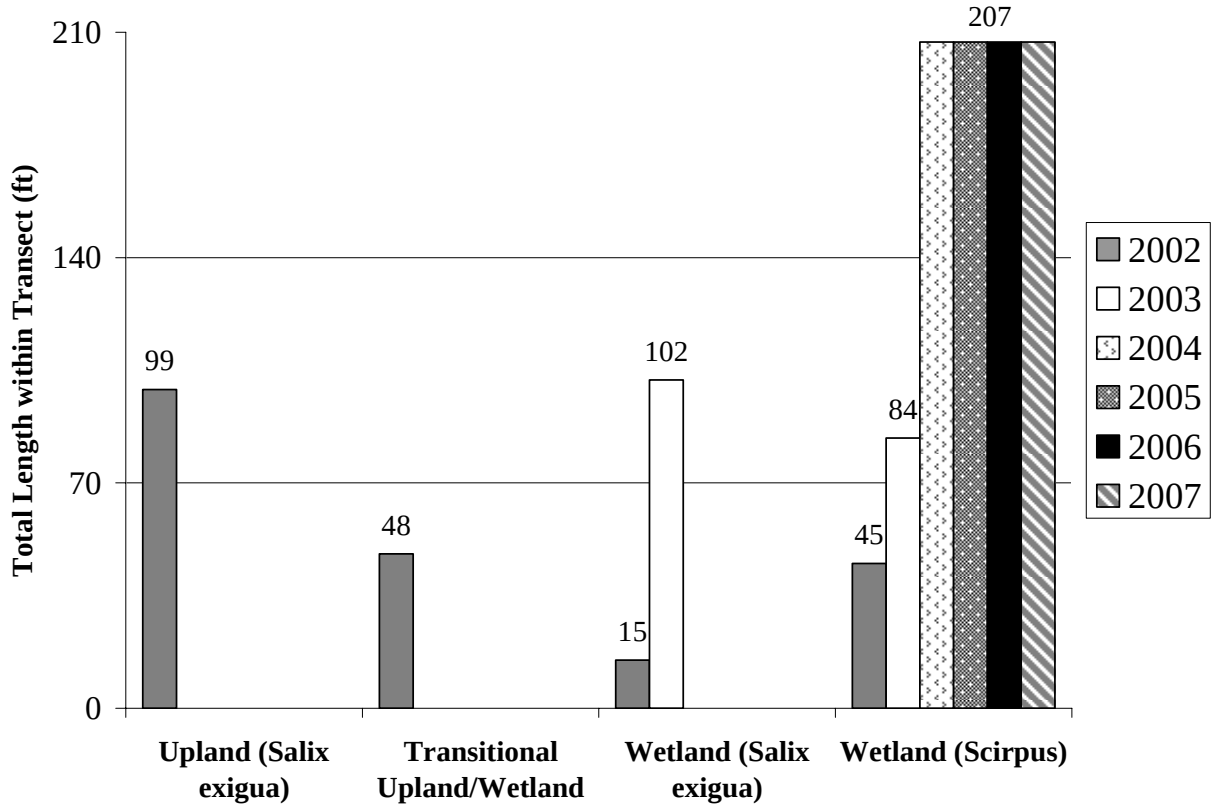


Chart 2: ***Transect maps showing vegetation types of Transect 1*** **(*South Cell*).**

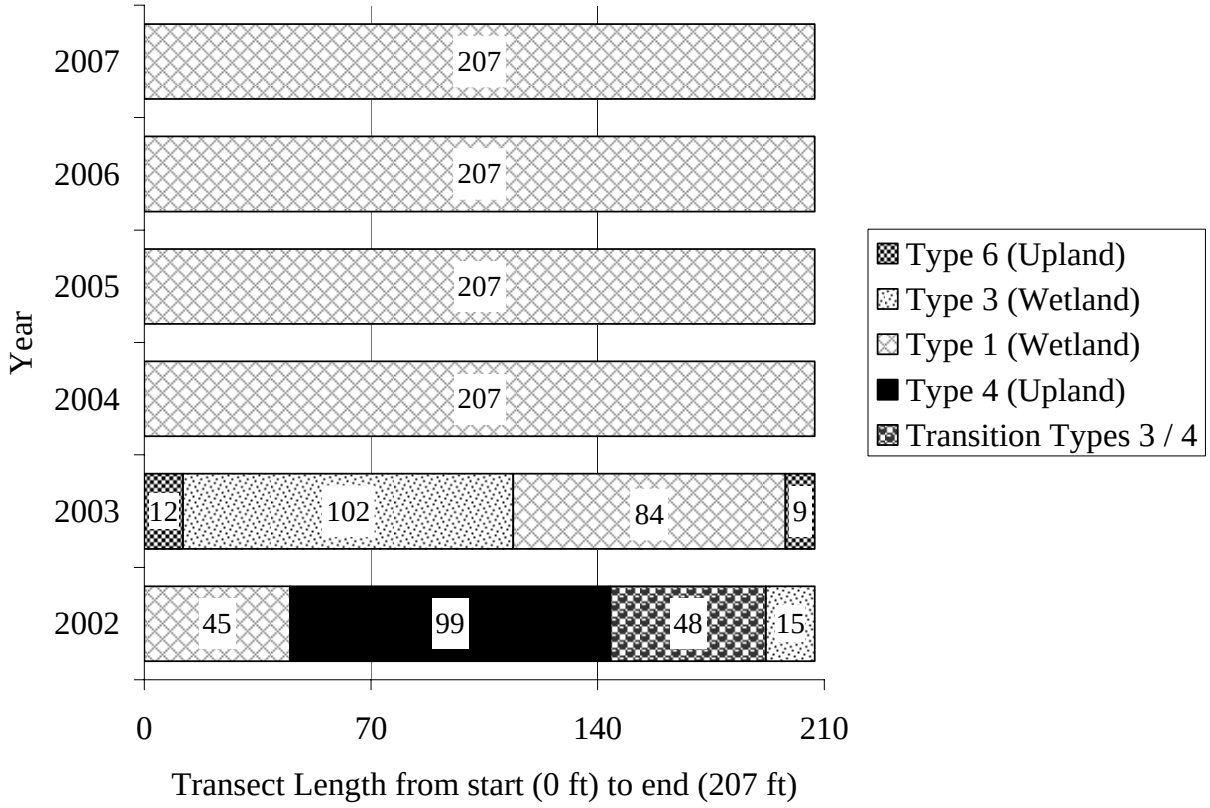


Table 2b: ***2002-2007 Transect 2*** **(*North Cell*) *data summary.***

Monitoring Year	2003	2004	2005	2006	2007
Transect Length (feet)	162	162	162	162	162
# Vegetation Community Transitions along Transect	4	3	3	3	3
# Vegetation Communities along Transect	2	3	3	3	3
# Hydrophytic Vegetation Communities along Transect	1	2	2	2	2
Total Vegetative Species	12	13	16	15	14
Total Hydrophytic Species	9	9	12	10	11
Total Upland Species	3	4	4	5	3
Estimated % Total Vegetative Cover	100	100	100	100	100
% Transect Length Comprised of Hydrophytic Vegetation Communities	28	67	75	85	87
% Transect Length Comprised of Upland Vegetation Communities	72	33	25	15	13
% Transect Length Comprised of Unvegetated Open Water	0	0	0	0	0
% Transect Length Comprised of Bare Substrate	0	0	0	0	0

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

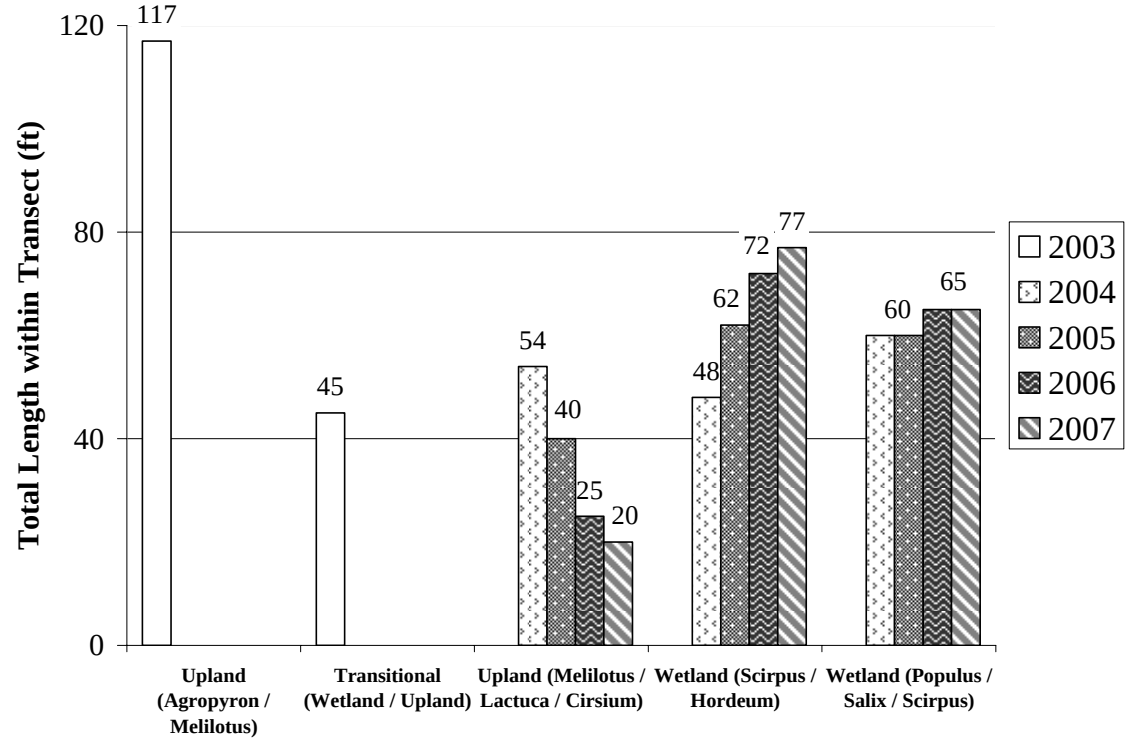
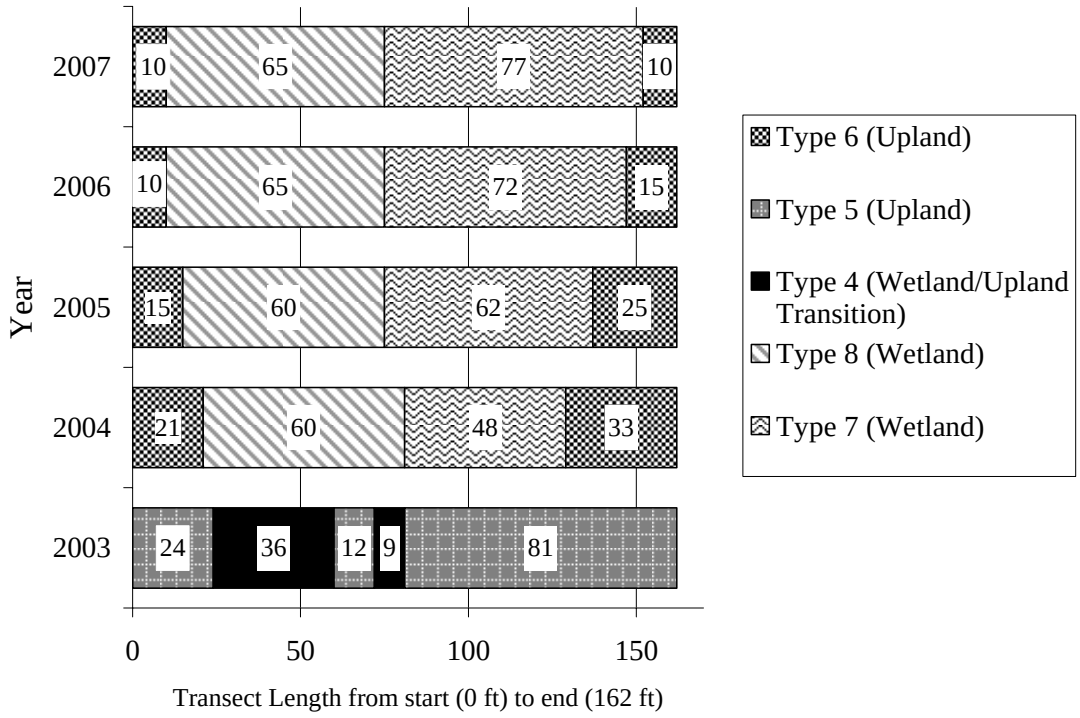


Chart 4: ***Transect maps showing vegetation types of Transect 2*** **(*North Cell*) *from start* (*0 feet*) *to end* (*162 feet*) *for each year monitored.***



3.3 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; SP-2 and 4 are within upland areas in the respective cells.

Soils at SP-1 were a dark gray/grayish brown (2.5Y 4/1, 4/2) silt clay from 0 to 10 inches deep. In the north cell, SP-3 was a very dark gray/grayish brown (10 YR 3/1,3/2) from 0 to 10 inches. Dark yellowish brown mottles (10YR 3/6) were also noted throughout the profile. Saturation was observed at the surface at both wetland soil pits. COE Forms 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 (an accumulation of thin, flat, coarse rock fragments) loam and loam (respectively) soil complex. At site 369, a brown to yellowish brown (10 YR 4/2, 4/3, 5/6) silt clay matrix was observed and soils were saturated to the surface (aquic moisture regime). At site 380, very dark brown (10 YR 2/2) silty, gravelly loam was observed from 0 to 10 inches and was saturated to the surface (aquic moisture regime). COE Forms for wetlands 369 and 380 are included in **Appendix E**.

3.4 Wetland Delineation

The delineated wetland boundary at the school mitigation site is depicted on **Figure 3** in **Appendix A**. The delineation resulted in a total of 0.91 acre of wetland development within the north and south cells; an increase of 0.08 acre since 2006 (**Table 3**). Obligate vegetation continues to increase within the south cell, particularly *Scirpus* and *Typha* as a result of the saturated and frequent inundation conditions. The willows within the south cell may not persist in these conditions unless close to the edge. Slight expansion (< 0.005 acre) may occur in the southeast corner up the low slope bank if saturation and inundation continue to persist. The north cell may expand into the northeast corner, along the north edge and along the west end of the south edge if saturated conditions continue to persist; the maximum potential of wetland expansion in the north cell is estimated to be < 0.1 acre. Given the topographic constraints, a total maximum wetland boundary was estimated for the School Site as 1.0 acre; the site has likely reached 91% of its potential wetland acreage, however the current 0.91 acre is 101% of the adjusted mitigation goal (0.9 acre) for the north and south cells. The COE Forms are included in **Appendix B.**

The gross wetland acreages for the recreated wetlands along Highway 212 were 0.79 acre at Wetland 369 and 0.39 acre at Wetland 380 (**Figure 3, Appendix E**). Wetland vegetation is expanding from the east side of wetland 369 into the shallow open water. Along all other edges very little emergent wetland vegetation expansion is occurring because the water is too deep.

The cattail community around the circumference of wetland 380 has expanded into the open water (**Table 3**).

The total adjusted mitigation acreage goal is 2.4 acres, of which 0.9 acre were intended to be created within the north and south cells of the School Mitigation Site and a total of 1.5 acres at the Highway 212 wetlands. The total gross wetland acreage within the three Lame Deer-East mitigation sites is 2.09 acres, a 0.17 acre increase since 2006 (**Table 3**) and representing 87% of the adjusted 2.4 acres adjusted mitigation goal for the Lame Deer-East mitigation site.

Table 3: ***2003-2007 summary of wetland features for all Lame Deer-East mitigation sites.***

YEAR[1]	WETLAND FEATURE (ACRE)									TOTAL GROSS WETLAND (acre)
	School Site			Wetland 369			Wetland 380			
	Open Water	Net Wetland	Gross Wetland	Open Water	Net Wetland	Gross Wetland	Open Water	Net Wetland	Gross Wetland	
2003	0	0.47	**0.47**	0.52	0.05	**0.57**	0.14	0.09	**0.23**	**1.27**
2004	0	0.62	**0.62**	0.52	0.05	**0.57**	0.14	0.16	**0.30**	**1.27**
2005	0	0.85	**0.85**	0.62	0.08	**0.70**	0.17	0.20	**0.36**	**1.91**
2006	0	0.83	**0.83**	0.57	0.18	**0.70**	0.15	0.24	**0.39**	**1.92**
2007	0	0.91	**0.91**	0.55	0.24	**0.79**	0.11	0.28	**0.39**	**2.09**
GOAL			**0.90**			**0.75[2]**			**0.75[2]**	**2.40**
% Goal Achieved			**101%**			**105%**			**52%**	**87%**

[1] 2002 not included; the north cell, and wetlands 369 and 380 were not assessed in 2002.
[2] Total goal for the 369 and 380 wetlands is 1.5 acres.

3.5 Wildlife

Wildlife species observed at the school mitigation site are listed in **Table 4.** No bird boxes have been installed at this site. In general, wildlife usage of the School Mitigation Site, and Wetlands 369 and 380 is low to moderate. Red-winged Blackbird and Common Snipe observed within the School Site wetland are indicative of improving wetland characteristics at this site. Of special interest were observations of northern leopard frogs (*Rana pipiens*) at all three sites during various monitoring years. Leopard frogs are considered a "species of special concern" by the MTNHP due largely to their apparent extirpation from the portion of their historic distribution west of the Continental Divide. This species has been assigned the rank of S1 (critically imperiled) in intermountain valleys and S3 (rare occurrence and/or restricted range and/or vulnerable to extinction) in the Great Plains region (which includes the project area) by the

MTNHP. Largemouth bass were apparently stocked in W-369 and W-380 and were observed during most years.

Table 4. ***2002-2007 wildlife species observed at the School Mitigation Site.***

AMPHIBIAN AND REPTILE	
Northern Leopard Frog (*Rana pipiens*)	
BIRD	
American Goldfinch (*Carduelis tristis*)	Eastern Kingbird (*Tyrannus tyrannus*)
American Robin (*Turdus migratorius*)	**Red-winged Blackbird (*Agelaius phoeniceus*)**
Cedar Waxwing (*Bombycilla cedorum*)	Song Sparrow* *(Melospiza melodia*)
Common Grackle* (*Quiscalus quiscula*)	Yellow Warbler* (*Dendroica petechia*)
Common Snipe(*Gallinago gallinago*)	Western Wood Pewee* (*Contopus sordidulus*)
Common Yellowthroat *(Geothlypis trichas)*	Unidentified waterfowl
MAMMAL	
Cattle (tracks)	

*Individuals not in wetland but in adjoining upland.
Bolded species indicate those documented within the analysis area in 2007.

3.6 Macroinvertebrates

No macroinvertebrate samples were collected on the site.

3.7 Functional Assessment

Completed Functional Assessment Forms for the School Mitigation Site are 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 Highway 212. The assessment does provide 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 2007 (**Table 5**). Functional units (FU) decreased slightly from 2006 as the site is no longer subject to wave action (increased vegetation), which nominally affected the score. Wetland 369 increased to a Category II wetland as a result of the new observation of northern leopard frogs within the wetland; FU increased from 5.04 in 2006 to 6.95 in 2007. Wetland 380 is also a Category II site due to the breeding population of the northern leopard frogs; FU remained the same from 2006 to 2007. Functional assessment forms are included in **Appendix B** (School Mitigation Site) and **Appendix E** (Highway 212 sites). Total functional unit gain for all Lame Deer-East Mitigation sites as of 2007 is 15.72, a slight increase since 2006.

Table 5: ***Summary of 2006 and 2007 wetland function/value ratings and functional points at the Lame Deer-East Wetland Mitigation Sites.***

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	2006 School Site	2006 W-369	2006 W-380	2007 School Site	2007 W-369	2007 W-380
Listed/Proposed T&E Species Habitat	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)
MTNHP Species Habitat	Moderate (.7)	Low (0)	High (1.0)	Moderate (.7)	High (.8)	High (1.0)
General Wildlife Habitat	Moderate (.7)	Moderate (.6)	High (.9)	Moderate (.7)	High (.9)	High (.9)
General Fish/Aquatic Habitat	NA	Moderate (.6)	High (.8)	NA	High (.8)	High (.8)
Flood Attenuation	Low (.2)	Low (.2)	Low (.1)	Low (.2)	Low (.2)	Low (.1)
Short and Long Term Surface Water Storage	Moderate (.6)	High (.8)	High (.8)	Moderate (.6)	High (.8)	High (.8)
Sediment, Nutrient, Toxicant Removal	High (1)	High (1)	High (.9)	High (1)	High (1)	High (.9)
Sediment/Shoreline Stabilization	High (.9)	High (1)	High (1.0)	NA	High (1)	High (1.0)
Production Export/Food Chain Support	Mod (.4)	Moderate (.6)	Moderate (.6)	Mod (.4)	Moderate (.7)	Moderate (.6)
Groundwater Discharge/Recharge	High (1)	High (1)	High (1)	High (1)	High (1)	High (1)
Uniqueness	Mod (.4)	Mod (.4)	Mod (.4)	Mod (.4)	Mod (.6)	Mod (.4)
Recreation/Education Potential	High (1)	High (1)	High (1)	High (1)	High (1)	High (1)
Actual Points/Possible Points	6.9/11	7.2/12	8.5/12	6.0/10	8.8/12	8.5/12
% of Possible Score Achieved	63%	60%	71%	60%	73%	71%
Overall Category	III	III	II	III	II	II
Total Acreage of Assessed Wetlands within Monitoring Area	**0.83**	**0.70**	**0.39**	**0.91**	**0.79**	**0.39**
Total Functional Units (acreage x actual points)	**5.72**	**5.04**	**3.31**	**5.46**	**6.95**	**3.31**
Net Acreage Gain ("new" wetlands)	**0.83**	**0.70**	**0.39**	**0.91**	**0.79**	**0.39**
Net Functional Unit Gain (new acreage x actual points)	**5.72**	**5.04**	**3.31**	**5.46**	**6.95**	**3.31**
Total Functional Unit Gain Lame Deer-East Mitigation Sites	**14.07**			**15.72**		

3.8 Photographs

Representative photos taken from photo points and transect ends are included in **Appendix C.** Photos of the recreated wetlands along Highway 212 are included in **Appendix E**. An extra photograph was taken of the wetland 369 culvert washout.

3.9 Maintenance Needs/Recommendations

The stormwater inlet culvert in the southwest corner of the south cell of the School Mitigation Site was in working order and required no maintenance. Although not technically part of the MDT project, the outflow culvert in Wetland-369 is blocked by sediment and woody debris; the beaver dam remains present.

3.10 Current Credit Summary

Several changes in the original grading plan (**Appendix D**) of the School Mitigation Site have occurred and thus affected the mitigation goal of 1.79 acres. A trail (0.1 acre) was constructed through the south west side of the originally planned wetland, decreasing the mitigation acreage to 1.68 acres (1.23 acres creation and 0.45 acre restoration) (Bell 2000). In 2000, due to concerns regarding the presence of a sanitary sewer line through the wetland, MDT further redesigned the mitigation site to place fill over the line to protect from freeze and thaw problems (Martin 2001). A 6-meter wide area with a 6:1 slope was to be left at existing elevation over the sewer line; no adjustment to the mitigation acreage was performed at this time because it was assumed that this area would develop into wetlands. However, the sewer line overburden will not convert to wetland given the elevation of the deposition. The upland acreage resulting from the sewer line overburden is estimated as 0.2 acre.

Further adjustment to the goal is necessary based on physical area constraints. The original goal includes areas that are outside of the MDT-defined monitoring boundary and beyond the created south and north cells. These include the stormwater inlet swale south west of the trail (0.4 acre), the willow area west of the north cell (0.1 acre), and small areas north and east of the north cell and east of the south cell (0.1 acre). The adjusted mitigation wetland goal for the School Site within the monitoring area, accounting for all of the estimated adjustments, is 0.9 acre. The mitigation acreage goal for the two recreated wetlands along Hwy. 212, W-369 and W-380, is 1.5 acres

The total adjusted mitigation acreage goal is 2.4 acres, of which 0.9 acre (adjusted goal) was intended to be created within the School Mitigation Site defined monitoring area and a total of 1.5 acres at the Highway 212 wetlands.

The delineation resulted in a total of 0.91 acre of wetland development within the north and south cells of the School Mitigation Site. The estimated gross wetland acreages for the recreated wetlands along Hwy. 212 were 0.79 acre at Wetland 369 and 0.39 acre at Wetland 380. The total gross wetland acreage within the three Lame Deer-East mitigation sites is 2.09 acres, a 0.17 acre increase since 2006; representing 87% of the adjusted mitigation acreage goal for the Lame Deer-East mitigation site.

There is a potential for the north and south cells of the School Mitigation Site to expand from the current 0.91 acre to approximately 1 acre. The maximum potential wetland acreage at W-369 is the current gross wetland boundary of 0.79 acre and is 0.39 acre for W-380; in both areas the potential maximum wetland acreage is identical to the current gross wetland acreage.

4.0 REFERENCES

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Appendix A

SCHOOL MITIGATION SITE:
2007 FIGURES 2 & 3

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

Figure 2 - Monitoring Activity Locations 2007

Legend
Monitoring Area Limits
Vegetation Transect
Aerial Reference Point
Photo Point
Soil Sample

Base photograph July 15, 2007

N
W
E
S

60' 30' 0 30' 60'

SCALE: 1" = 60'

Monitoring Area Limits
PP-O,P
Transect 2
North Cell
SS-3
SS-4
PP-Q
PP-M,N
PP-I
Sanitary Sewer Line Approximate Location
PP-K,L
PP-G
PP-H
PP-A,B,C,D,E
Transect 1
South Cell
SP-1
SP-2
PP-F,G
Begin
Monitoring Area Limits
Monitoring Area Limits
Trail
SCHOOL

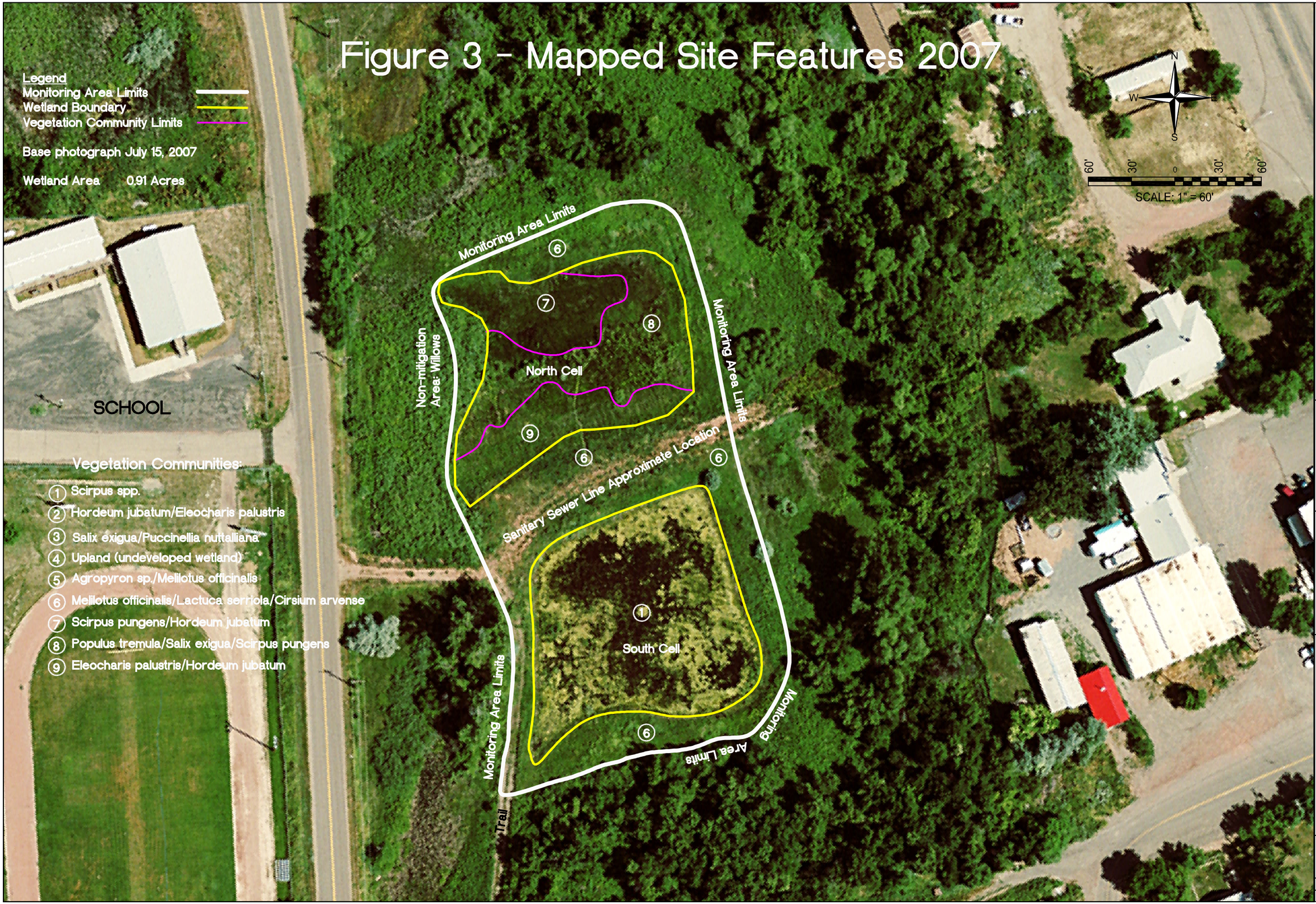
PROJECT NAME
MDT LAME DEER - EAST MITIGATION SITE
DRAWING TITLE
MONITORING ACTIVITY LOCATIONS 2007

PROJ NO: B43088.00 0406	DRAWN: SH/JR		
LOCATION: LAME DEER, MT	PROJ MGR: J. BERGLUND		
SCALE: 1" = 60'	CHECKED: LB	APPVD: JB	
FILE NAME: 2007 BASE.dwg			

PBSJ
3810 Valley Commons Drive
Suite 4
Bozeman, MT 59718

FIGURE
2 OF
REV -
Nov/16/2007

Figure 3 - Mapped Site Features 2007



PROJECT NAME
MDT LAME DEER - EAST MITIGATION SITE
DRAWING TITLE
MAPPED SITE FEATURES 2007

PROJ NO:	B43088.00 0406
LOCATION:	LAME DEER, MT
SCALE:	1" = 60'
FILE NAME:	2007 BASE.dwg
DRAWN:	SH/JR
PROJ MGR:	J. BERGLUND
CHECKED:	LB
APPVD:	JB

PBSJ
3810 Valley Commons Drive
Suite 4
Bozeman, MT 59718

FIGURE
3 OF -
REV -
Dec/06/2007

Appendix B

SCHOOL MITIGATION SITE:

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

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

LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name:__Lame Deer__ Project Number:____B43088.___ Assessment Date:_7_/_16__/_07
Location:__Lame Deer_School _____ MDT District:__#4 Glendive_____ Milepost:_____
Legal description: T__2 S_ R_41 E___ Section_34___ Time of Day: 8AM-12PM
Weather Conditions:__clear_____ Person(s) conducting the assessment Bacon/PBSJ
Initial Evaluation Date:__7__/_23___/_02_ Visit #:_____5___ Monitoring Year:____2007_____
Size of evaluation area ~2_acres Land use surrounding wetland: transportation corridors; school

HYDROLOGY

Surface Water Source:___stormwater and groundwater_____
Inundation**:** Present_X__ Absent _ Average depths:_18" Range of depths:_south cell: max depth: 24" ; north cell: 6"
Assessment area under inundation:_ South cell – 100%; north Cell – 50%)
Depth at emergent vegetation-open water boundary:__*_ft
If assessment area is not inundated are the soils saturated w/in 12" of surface**:** Yes_X___No____
Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): _____

Groundwater
Monitoring wells: Present_____ Absent X_____
Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

Additional Activities Checklist:
__X___Map emergent vegetation-open water boundary on air photo
__X__Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining etc.)
__-___GPS survey groundwater monitoring wells locations if present

COMMENTS/PROBLEMS: _____

VEGETATION COMMUNITIES

Community No.:__1__ Community Title (main species):__*Scirpus* spp.__

Dominant Species	% Cover	Dominant Species	% Cover
SCIACU	45	CARLAN	<1
ELEPAL	20	SALEXI	5
HORJUB	*	JUNTOR	*
EQUHYM	<1	TYPLAT	25
PUCNUT	*	SCIPUN	15
JUNBUF	*	Open water	10

COMMENTS/PROBLEMS: ___* species not observed, water 15-24" deep in south cell

Community No.:_2___ Community Title (main species): *Hordeum jubatum/Eleocharis palustris*

Dominant Species	% Cover	Dominant Species	% Cover
RUMCRI	<5	SONARV	<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 nuttalliana* _____

Dominant Species	% Cover	Dominant Species	% Cover
SALEXI	10	ELEPAL	10
PUCNUT	20	Open water	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%)	GLYGRA	<5
SALEXI	10	TRIFOLIUM spp.	10
SONARV	<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./Melilotus officinalis*_____

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):_*Melilotus officinalis/Sonchus arvensis/Cirsium arvense* _____

Dominant Species	% Cover	Dominant Species	% Cover
MELOFF	5	CHEsp.	5
SONARV	35	PASSAT	1
CIRARV	35	GLYLEP	1
AGRsp.	15	ELEPAL	1
CARPRA	1	Salix spp.	<5

COMMENTS/PROBLEMS:
___Scattered Russian olive and planted upland species (see planted species list) < 1%

VEGETATION COMMUNITIES (continued)

Community No.:_7___ Community Title (main species): *Scirpus pungens/Hordeum jubatum*_____

Dominant Species	% Cover	Dominant Species	% Cover
RUMCRI	<1	SONARV	5
HORJUB	<1	SCIPUN	90
PUCNUT	*	ELEPAL	5
PUCDIS	*	GLYLEP	<5
TYPLAT	<1	CARsp. (no inflor.)	<1
GALCIR	<1		

COMMENTS/PROBLEMS: *****not seen but may be present

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	SONARV	<1
Salix sp. (no catkin)	<1	TYPLAT	<1
Kochia sp.	5	PUCDIS	1
MELOFF	<1	PUNUT	1

COMMENTS/PROBLEMS: ___other spp.: TYPLAT, SCIACU, JUNTOR <1; MELALB

Community No.:_9___ Community Title (main species):__*Eleocharis palustris*/*Hordeum jubatum*_____

Dominant Species	% Cover	Dominant Species	% Cover
HORJUB	25	PHAARU	<1
POAPAL	10	SCIPUN	5
SONARV	5	SALEXI	5
RUMCRI	5	ELEPAL	40
AGRsp.	5	GLYGRA	<5

COMMENTS/PROBLEMS:

Additional Activities Checklist:

_X___Record and map vegetative communities on air photo

COMPREHENSIVE VEGETATION LIST

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
Agropyron spp.	2, 3, 5, 6,7,9		
Carex hystericina	1		
Carex lanuginosa	1		
Carex praegracilis	6,7,8		
Chenopodium hybridium/album	4,6		
Cicuta douglasii (likely)	8		
Eleagnus angustifolia	6		
Eleocharis palustris	1,2,3,6,7,9		
Equisetum hyemale	1		
Galium circaezans	7		
Glyceria grandis	2, 9		
Glycyrrhiza lepidota	6,7		
Hordeum jubatum	1,2,3,5,7		
Juncus bufnoius	1,2,3,4		
Juncus torreyi	1		
Kochia scoparia	6,8		
Melilotus alba	6,8		
Melilotus officinalis	2,3,5,6,8		
Mentha arvensis	1		
Pastinaca sativa	7,8		
Populus tremula	8		
Prunus virginiana	6		
Puccinellia distans	7,8		
Puccinellia nuttalliana	1,2,3,7,8		
Ribes sp.	6		
Rosa sp.	6		
Rumex crispus	1,2,7,9		
Salix exigua (planted)	1,2,3,4,5,7,8		
Salix sp. (young sprig)	8		
Scirpus acutus	1,3		
Scirpus pallidus	1		
Scirpus pungens	1,2,5,7,8,9		
Sonchus arvensis	2,4,6,7,8		
Trifolium spp.	4		
Typha latifolia	1,2,3,7,8		
Cirsium arvense	6		

Bolded species were observed for the first time in 2007.

COMMENTS/PROBLEMS:

PLANTED WOODY VEGETATION SURVIVAL

Species	Number Originally Planted	# Obs. in 2002	# Obs. In 2007	Mortality Causes
Salix exigua sprigs (inside wetland)	Unknown	250	100-150	Area inundated; not counted after 2002 as unable to distinguish from volunteers.
Ribes spp. (outside wetland)	Unknown	13	0	Most of these plants were outcompeted by weeds and tall grasses or succumbed to drought.
Prunus virginiana (outside wetland)	Unknown	7	0	
Rosa sp. (outside wetland)	Unknown	-	0	

COMMENTS/PROBLEMS: ___Salix species within wetland area thriving; new species coming in within North Cell. These species are within the CT 6.

WILDLIFE

BIRDS

(Attach Bird Survey Field Forms)

Were man made nesting structures installed? Yes____ No__X__Type:_____ How many?_____ Are the nesting structures being utilized? Yes____ No____ Do the nesting structures need repairs? Yes____ No____

MAMMALS AND HERPTILES

Species	Number Observed	Indirect indication of use			
		Tracks	Scat	Burrows	Other

Additional Activities Checklist:
__NA___Macroinvertebrate sampling (if required)

COMMENTS/PROBLEMS: _____

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:

__X__ One photo for each of the 4 cardinal directions surrounding wetland
__X__ At least one photo showing upland use surrounding wetland – if more than one upland use exists, take additional photos
__X__ At least one photo showing buffer surrounding wetland
__X__ 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 (extra)

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:

__X___ Jurisdictional wetland boundary
__X___ 4-6 landmarks recognizable on the air photo
_ X___ Start and end points of vegetation transect(s)
__X___ 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:
__X___Delineate wetlands according to the 1987 Army Corps manual.
__X___ 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 2006 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 __X __
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__(X) *__ 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: 7/16/07 Examiner: LB/PBSJ 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	30
SALEXI	10
ELEPAL	10
TYPLAT	30
SCIPUN	<1
CARLAN	20
Total Vegetative Cover:	100%

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:		

MDT WETLAND MONITORING – VEGETATION TRANSECT (NORTH CELL)

Site: Lame Deer-NORTH CELL Date: 7/16/07 Examiner: LB/PBSJ Transect # 2

Approx. transect length: 306 deg Compass Direction from Start (M,N): 162 ft

Vegetation type A:	CT 6	
Length of transect in this type:	10’	Feet
Species:		Cover:
Agropyron sp.		75
SONARV		20
PANDIS		<5
HORJUB		5
RUMCRI		<1
KOCSCO		<1
Total Vegetative Cover:		100%

Vegetation type B:	CT 8	
Length of transect in this type:	65’	feet
SALEXI		30
POPTRE		50
SCIPUN		(90-understory)
SALsp.		15
KOCSCO		<1
HORJUB		<1
Total Vegetative Cover:		100%

Vegetation type C:	CT 7	
Length of transect in this type:	77’	feet
Species:		Cover:
SCIPUN		95
SONARV		<1
HORJUB		5
AGRsp.		<1
CAR sp (no inflor.)		<1
Total Vegetative Cover:		100%

Vegetation type D:	CT 6	
Length of transect in this type:	10’	feet
Species:		Cover:
CIRARV		<1
SONARV		10
SCIPUN		<1
AGRsp.		85
KOCSCO		<1
RUMCRI		<1
MELALB		<5
Total Vegetative Cover:		100%

MDT WETLAND MONITORING – VEGETATION TRANSECT (back of form)

Cover Estimate

+ = <1%
1 = 1-5%
2 = 6-10%
3 = 11-20%
4 = 21-50%
5 = >50%

Indicator Class:

+ = Obligate
- = Facultative/Wet
0 = Facultative

Source:

P = Planted
V = Volunteer

Percent of perimeter 5 (>50%) % developing wetland vegetation – excluding dam/berm structures.

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

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

100% of south cell and nearly 100% of intended north cell wetland developing wetland veg.; north cell may expand an extra 5 feet in SW corner and along north edge.

3

BIRD SURVEY – FIELD DATA SHEET

Date: 7/16/07

SITE: Lame Deer

Survey Time:

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
N Cell: Wilson's Snipe (aka Common)	1	Flush	MA				
S Cell:							
Red-winged Blackbird	1	BR (Singing)	MA				

Behavior: BP – one of a breeding pair; BD – breeding display; F – foraging; FO – flyover; L – loafing; N – nesting

Habitat: AB – aquatic bed; FO – forested; I – island; MA – marsh; MF – mud flat; OW – open water; SS – scrub/shrub; UP – upland buffer; WM – wet meadow, US – unconsolidated shoreline

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

Project/Site:	Lame Deer	Date:	7/16/07 (South Cell)
Applicant/Owner:	MDT	County:	Rosebud
Investigator:	LB/LWC	State:	MT

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID: emergent
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID: 1
Is the area a potential Problem Area?:		Yes	X	No	Plot ID: SP-1
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	SCIPUN	H	OBL	9			
2	EQUHYM	H	OBL	10			
3	CAR sp (no inflor.)	H	FACW-OBL	11			
4	AGR sp.	H	UPL	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/4

Sample point on margin, with water levels at 15-24" deep wetland vegetation may expand an extra foot up embankments.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: 6" (in.)
- Depth to Saturated Soil: surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:
Water 15-24" deep in south cell.

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.
0-10	B	2Y 4/1, 4/2			silty sandy clay

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Hyrdric soils are developing.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X	Yes	____	No	
Wetland Hydrology Present?	X	Yes	____	No	
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:

Wetland completely developed in Cell 1, maximum acreage likely attained, however the depth of inundation may allow wetland vegetation to colonize up banks an extra 1-2 feet around perimeter if this hydrology persists for the next few years.

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

Project/Site: Lame Deer	Date: 7/16/07 (South Cell)
Applicant/Owner: MDT	County: Rosebud
Investigator: LB/LWC	State: MT

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID: UPL
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID: 1
Is the area a potential Problem Area?:		Yes	X	No	Plot ID: SP-2
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	AGR sp.	H	UPL	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-). 0/1

Sample point on transition zone between upland and wetland.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: - (in.)
- Depth to Saturated Soil: 10 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:

With 15-24” of water in south cell at this time of year, these margin areas up containment banks may convert to wetland if conditions persist for the next few years.

SOILS

Map Unit Name (Series and Phase): Straw-Canburn

Drainage Class: well; very poor (resp.)

Field Observations

Taxonomy (Subgroup): mixed Cumulic Haploborolls; frigid Cumulic Haploborolls (resp.)

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.
0-10	B	2.5Y 4/3			Silty clay w/ gravels

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
____ Gleyed or Low-Chroma Colors
____ Concretions
____ High Organic Content in surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

WETLAND DETERMINATION

Hydrophytic Vegetation Present? ____ Yes X No
Wetland Hydrology Present? X Yes ____ No
Hydric Soils Present? ____ Yes X No

Is this Sampling Point Within a Wetland? ____ Yes X No

Remarks:

Saturated conditions are persisting along the containment banks of wetland, which may enable wetland to expand 1-2 additional feet around perimeter if conditions persist for a few more years.

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

Project/Site: Lame Deer	Date: 7/16/07 (North Cell)
Applicant/Owner: MDT	County: Rosebud
Investigator: LB/LWC	State: MT

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID: emergent
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID: 2
Is the area a potential Problem Area?:		Yes	X	No	Plot ID: SP-3
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	HORJUB	H	FACW	9			
2	RUMCRI	H	FACW	10			
3	POAPAL	H	FACW	11			
4	SCIPUN	H	OBL	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/4

Hydrophytic community fairly stable with some slight expansion around S, E and N perimeters, but has expanded to west to connect to adjacent shrub community (not part of wetland creation area).

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: 2 (in.)
- Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- \- Inundated
- X Saturated in Upper 12 Inches
- \- Water Marks
- \- Drift Lines
- \- Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:
50% of the north cell is inundated w/ 6” of water.

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.
0-10	A-B	10YR 3/1,3/2	10 YR 3/6	Prom, many, lg	Silt clay loam

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Soil darkening.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X	Yes	____	No	
Wetland Hydrology Present?	X	Yes	____	No	
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:

Wetland continues to expand toward base of containment banks on all sides and willow edge to west. Most of future expansion could include the SW corner and SSW edge. If inundation levels continue to persist the next few years expansion will continue, though increments of expansion are small (on 0.01 acre scale) given potential wetland boundary limitations.

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

Project/Site: Lame Deer	Date: 7/16/07 (North Cell)
Applicant/Owner: MDT	County: Rosebud
Investigator: LB/LWC	State: MT

Do Normal Circumstances exist on the site:	X	Yes		No	Community ID: emergent
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID: 2
Is the area a potential Problem Area?:		Yes	X	No	Plot ID: SP-4
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	MELOFF	H	FACU	9			
2	CIRARV	H	FACU	10			
3	SONARV	H	FACU	11			
4	AGR sp.	H	UPL	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 0/4

Sample point located in SW area where expansion of wetland may occur if current inundation levels persist.

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake, or Tide Gauge
_____ Aerial Photographs
_____ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water: - (in.)

Depth to Free Water in Pit: - (in.)

Depth to Saturated Soil: 6 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
X Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 Inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks:
Saturation zone evident beyond wetland edge.

SOILS

Map Unit Name (Series and Phase):	Straw-Canburn	Drainage Class:	well; very poor (resp.)
Taxonomy (Subgroup):	mixed Cumulic Haploborolls; frigid Cumulic Haploborolls	Field Observations 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.
0-6	A	10YR 3/2			Silt sand
6-10	B	10YR 3/1, 3/2	10YR 3/6	Prom, many	Silt sand

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	____	Yes	X	No		
Wetland Hydrology Present?	X	Yes	____	No		
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland?	____ Yes X No

Remarks:

Wetland may spread into this SW area, growth is slower in north cell than south cell, however saturation and inundation boundaries have expanded since last year which will likely encourage wetland vegetation expansion if this level of hydrology persists.

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

Project/Site:	Lame Deer			Date:	7/16/07
Applicant/Owner:	MDT			County:	Rosebud
Investigator:	LB/LWC			State:	MT
Do Normal Circumstances exist on the site:	X	Yes		No	Community ID: emergent
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?:		Yes	X	No	Plot ID: WL-369
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	GLYGRA	H	OBL	9			
2	JUNTEN	H	FACW	10			
3	CICDOU	H	No Listing	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

Wetland vegetation expanding slightly from mud slide on east end into water, otherwise water levels are so high vegtetation has not expanded into OW zone, nor up banks because of steep grade.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake, or Tide Gauge
- Aerial Photographs
- Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: 0 (in.)
- Depth to Saturated Soil: surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- X Saturated in Upper 12 Inches
- X Water Marks
- Drift Lines
- X Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks:
At SP soil is saturated. ***Silt fence is now mostly in water, fully vegetated behind fence, should be removed.*** In general, water level is too high to allow emergent vegetation to colonize into the OW for more vegetated wetland acreage.

High spring flows washed out soils beside culvert, so essentially the beaver dam is what is causing the water to pond. Sediment from washout evident downstream.

SOILS

Map Unit Name (Series and Phase): Bitton-Shambo

Drainage class: well

Taxonomy (Subgroup):

Field Observations

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.
0-10	A	10YR 4/2,4/3,5/6 mixture			Silt clay

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
____	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X	Yes	____	No	
Wetland Hydrology Present?	X	Yes	____	No	
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:

Water too deep to allow significant expansion of emergent vegetation into OW area. Beaver dam causing water to pond, soils around culvert washed out during spring high flows, large trench observed and photos included in report. Leopard frogs observed.

Silt fence should be removed.

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

Project/Site:	Lame Deer			Date:	7/16/07
Applicant/Owner:	MDT			County:	Rosebud
Investigator:	LB/LWC			State:	MT
Do Normal Circumstances exist on the site:	X	Yes		No	Community ID: emergent
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?:		Yes	X	No	Plot ID: WL-380
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	JUNTEN	H	FAC	9			
2	SALBEB	S	FACW	10			
3	SCIPAL	H	OBL	11			
4	TYPLAT	H	OBL	12			
5	MEDLUP	H	FAC	13			
6	CICDOU	H	--	14			
7	SALEXI	H	OBL	15			
8	GLYLEP	H	FACU	16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 6/8

Wetland vegetation community well developed and diverse, expansion limited by steep embankment on all sides except up drainage to the east adjacent to the creek where expansion is occurring 1-2 feet/year.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: 0 (in.)
- Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- \- Inundated
- X Saturated in Upper 12 Inches
- X Water Marks
- \- Drift Lines
- \- Sediment Deposits
- \- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:

High spring flows likely increased saturation levels around perimeter and up-drainage during early summer.

SOILS

Map Unit Name: Bitton-Shambo
Drainage Class: well
(Series and Phase):
Taxonomy (Subgroup):
Field Observations
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.
0-10	B	10YR 2/2			Silt gravelly loam

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
____	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X	Yes	____	No	
Wetland Hydrology Present?	X	Yes	____	No	
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:

Wetland fringe appears fully developed, but may expand slightly on east end where stream enters wetland fringe, especially if there is another high spring flow year as in 2007.

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

1. Project Name: Lame Deer-East **2. Project #:** _____ **Control #:** _____

3. Evaluation Date: 7/16/2007 **4. Evaluator(s):** LB/PBSJ **5. Wetland / Site #(s):** School

6. Wetland Location(s) i. T: 2 S **R:** 41 E **S:** 34 **T:** __ N **R:** __ E **S:** _____

ii. Approx. Stationing / Mileposts: _____

iii. Watershed: 10100003 **GPS Reference No. (if applies):** _____

Other Location Information: _____

7. A. Evaluating Agency MDT

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

B. Purpose of Evaluation:

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

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

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS [1]	SYSTEM [2]	SUBSYSTEM [2]	CLASS [2]	WATER REGIME [2]	MODIFIER [2]	% OF AA
Depression	Palustrine	None	Emergent Wetland	Saturated	Excavated	85
Depression	Palustrine	None	Scrub-Shrub Wetland	Saturated	Excavated	15
---	---	---	---	---	---	
---	---	---	---	---	---	

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

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

12. GENERAL CONDITION OF AA

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

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

Comments: (types of disturbance, intensity, season, etc.) area has a road along the side of south cell, has signs of use.

ii. Prominent weedy, alien, & introduced species: yellow sweet clover and pig weed are at concentrated levels around periphery of cells

iii. Briefly describe AA and surrounding land use / habitat: school across street and center of town within sight of wetlands.

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

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

Comments: Populus sp. almost at heights of "tree" class (>20 ft).

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)	☐High								☒Moderate								☐Low			
Class Cover Distribution (all vegetated classes)	☐Even				☐Uneven				☐Even				☒Uneven				☐Even			
Duration of Surface Water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	H	--	--	--	--	--	--
Moderate disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

iii. **Rating** (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)			
	☐ Exceptional	☒ High	☐ Moderate	☐ Low
Substantial	--	--	--	--
Moderate	--	.7 (M)	--	--
Low	--	--	--	--

Comments: The surrounding upland and stream corridor is prime habitat for deer 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	☐ Permanent/Perennial			☐ Seasonal / Intermittent			☐ Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects (*e.g.* submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading – 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--

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

iii. **Rating** (Use the conclusions from 14D(i) and 14D(ii) above and the matrix below to 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)			
	☐ Exceptional	☐ High	☐ Moderate	☐ Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: _____

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

Applies only to wetlands subject to flooding via in-channel or overbank flow.
If wetlands in AA do not 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	☐ ≥ 10 acres			☐ <10, >2 acres			☒ ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	--	--	--	--	--	--	--	--	.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.	☐ >5 acre feet			☒ <5, >1 acre feet			☐ ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	--	--	--	--	.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.			
% cover of wetland vegetation in AA	☒ ≥ 70%		☐ < 70%		☐ ≥ 70%		☐ < 70%	
Evidence of flooding or ponding in AA	☒ Yes	☐ No	☐ Yes	☐ No	☐ Yes	☐ No	☐ Yes	☐ No
AA contains **no or restricted outlet**	1 (H)	--	--	--	--	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--

Comments: _____

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

Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body 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		
	☐Permanent / Perennial	☐Seasonal / Intermittent	☐Temporary / Ephemeral
≥ 65 %	--	--	--
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	☐ Vegetated component >5 acres						☐ Vegetated component 1-5 acres						☒ Vegetated component <1 acre					
B	☐ High		☐ Moderate		☐ Low		☐ High		☐ Moderate		☐ Low		☐ High		☒ Moderate		☐ Low	
C	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☒N	☐Y	☐N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.4M	--	--
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	☐rare	☐common	☐abundant	☐rare	☐common	☐abundant	☐rare	☒common	☐abundant
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments:

14L. RECREATION / EDUCATION POTENTIAL

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

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

iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?
☒ **Yes** [Proceed to 14L (ii) and then 14L(iv).] ☐ **No** [Rate as low in 14L(iv)]

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

Ownership	Disturbance at AA from #12(i)		
	☒ Low	☐ Moderate	☐ High
Public ownership	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	0.70	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	H	1.00	1	
H. Sediment/Shoreline Stabilization	NA		--	
I. Production Export/Food Chain Support	M	0.40	1	
J. Groundwater Discharge/Recharge	H	1.00	1	
K. Uniqueness	M	0.40	1	
L. Recreation/Education Potential	H	1.00	1	
	Totals:	6.00	10.00	
	Percent of Total Possible Points:		**60%** (Actual / Possible) x 100 [rd to nearest whole #]	

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

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following Category II criteria. If not satisfied, proceed to Category IV.)
- ☐ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish / Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of total possible points is > 65%.

☒ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied.)

Category IV Wetland: (Criteria for Categories I or II are not satisfied **and** all of the following criteria are met; If not satisfied, proceed to Category III.)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export / Food Chain Support; **and**
- ☐ Percent of total possible points is < 30%.

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

☐ **I** ☐ **II** ☒ **III** ☐ **IV**

Appendix C

SCHOOL MITIGATION SITE:
2007 REPRESENTATIVE PHOTOGRAPHS

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

LAME DEER SCHOOL WETLAND MITIGATION SITE 2007

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 WETLAND MITIGATION SITE 2007

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 (new direction) **Description:** North Cell, vegetation east of road and north of dike **Compass Reading:** NNW

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

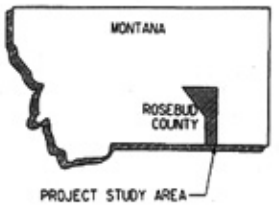
1999 GRADING AND PLANTING PLANS, SCHOOL RESERVE MITIGATION SITE
MARTIN LETTER: SANITARY SEWER LINE
CARTER-BURGESS LETTER PERTAINING TO WETLAND MITIGATION ACREAGE
RE-CREATED HWY. 212 WETLAND SITE PLANS

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

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH37-2(16)42, NH37-2(17)49	1

LAND & WATER D-1

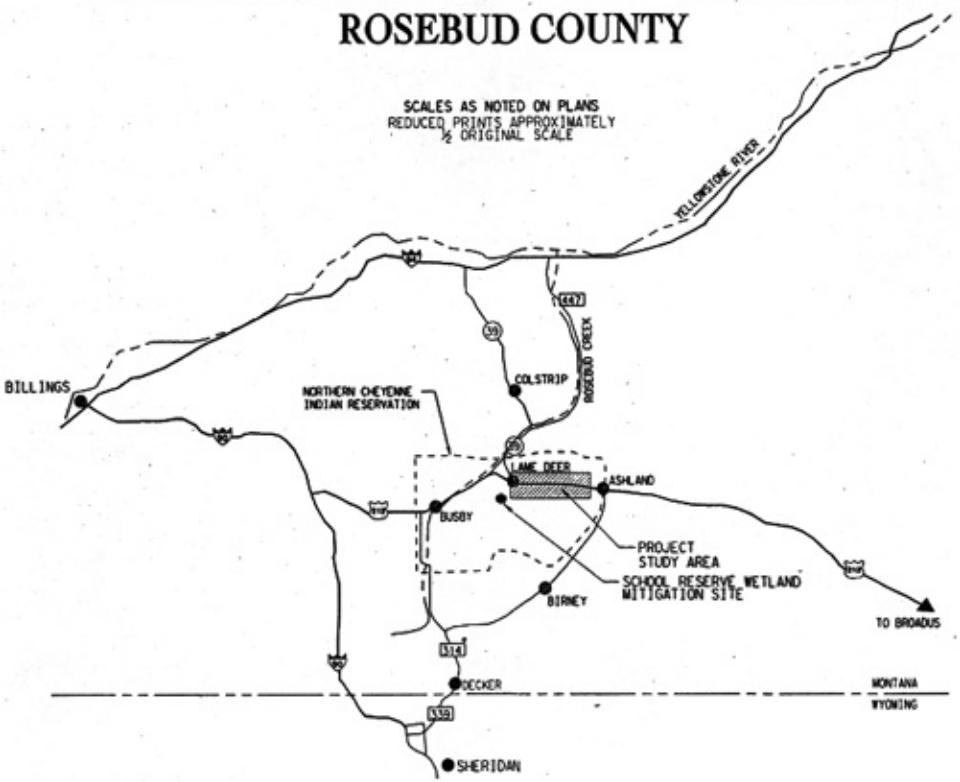
MONTANA DEPARTMENT OF TRANSPORTATION



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

SCALES AS NOTED ON PLANS
REDUCED PRINTS APPROXIMATELY
½ ORIGINAL SCALE

PRELIMINARY- FOR REVIEW
FINAL PLANS



PLANS PREPARED BY

Carter-Burgess
216 SIXTEENTH STREET MALL, SUITE 1700
DENVER, COLORADO 80202
(303) 820-5240

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

CARL S. PEIL 2614PE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

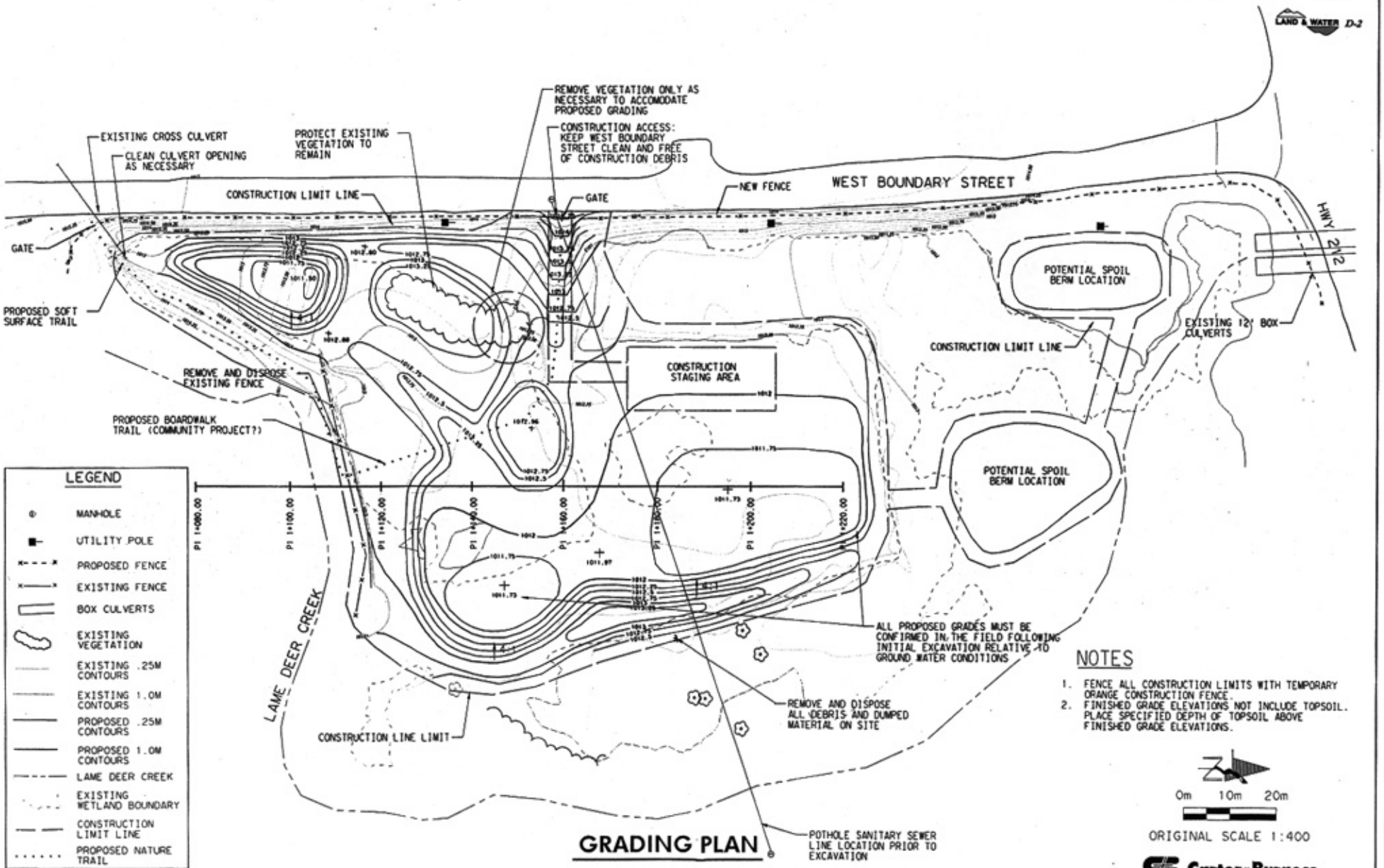
APPROVED:
DIVISION ADMINISTRATOR DATE

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

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHS7-2(116)42, NHS7-2(117)49	7

MONTANA DEPARTMENT OF TRANSPORTATION

LAND & WATER D-2



GRADING PLAN

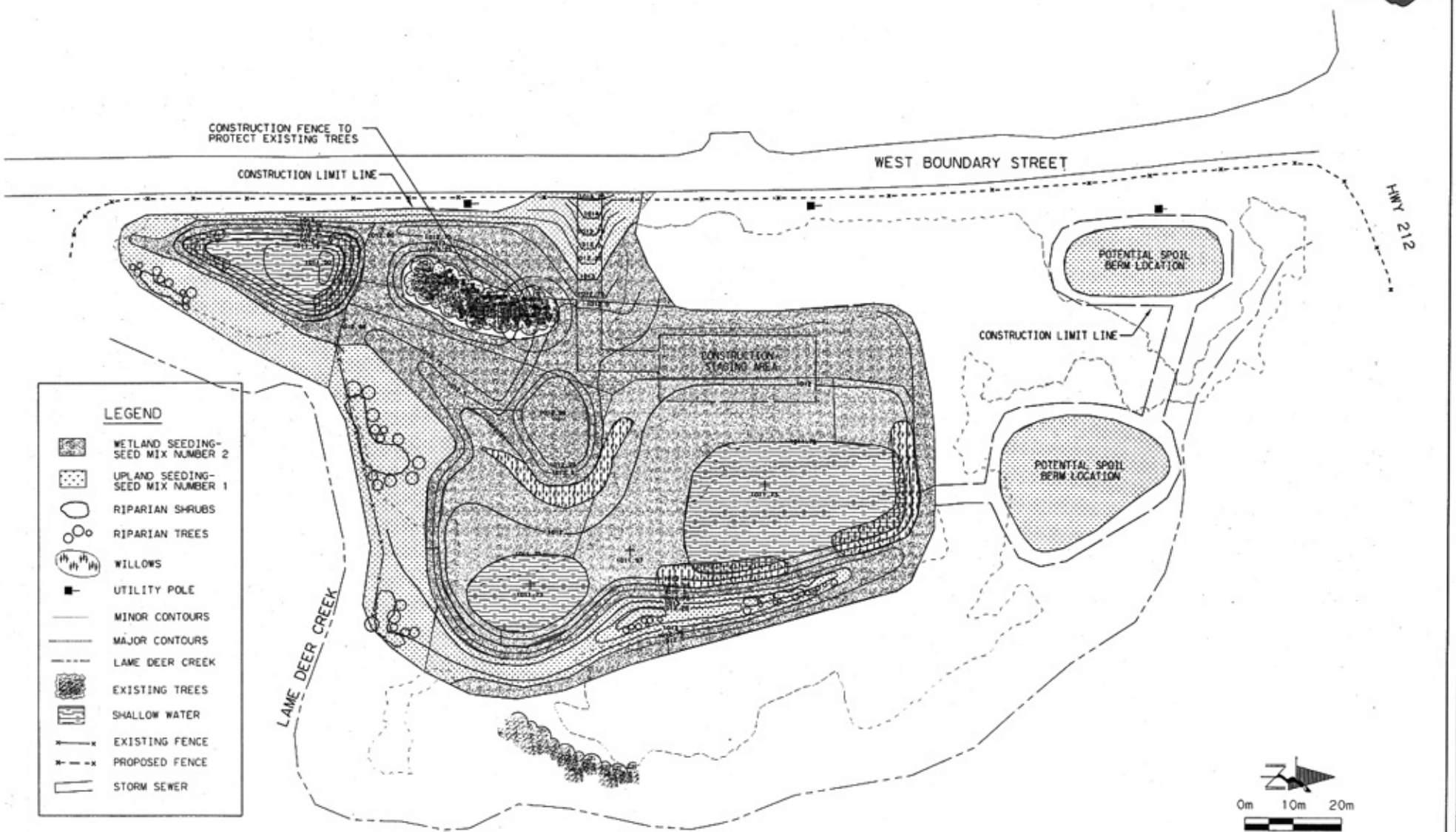
Carter Burgess

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

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NHS7-2(16)42, NHS7-2(17)49	9

MONTANA DEPARTMENT OF TRANSPORTATION

LAND & WATER D.J



PLANTING PLAN

ORIGINAL SCALE 1:400

Carter-Burgess

LAND & WATER D-4

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 6m ster 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

cc: G. Stock
J. Mar
B. Bre
T. Hik
L. Lirb
S. Althe
L. Sickerson
File(or)

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

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 Lame 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

Diana Bell
Carter-Burgess

Attachments

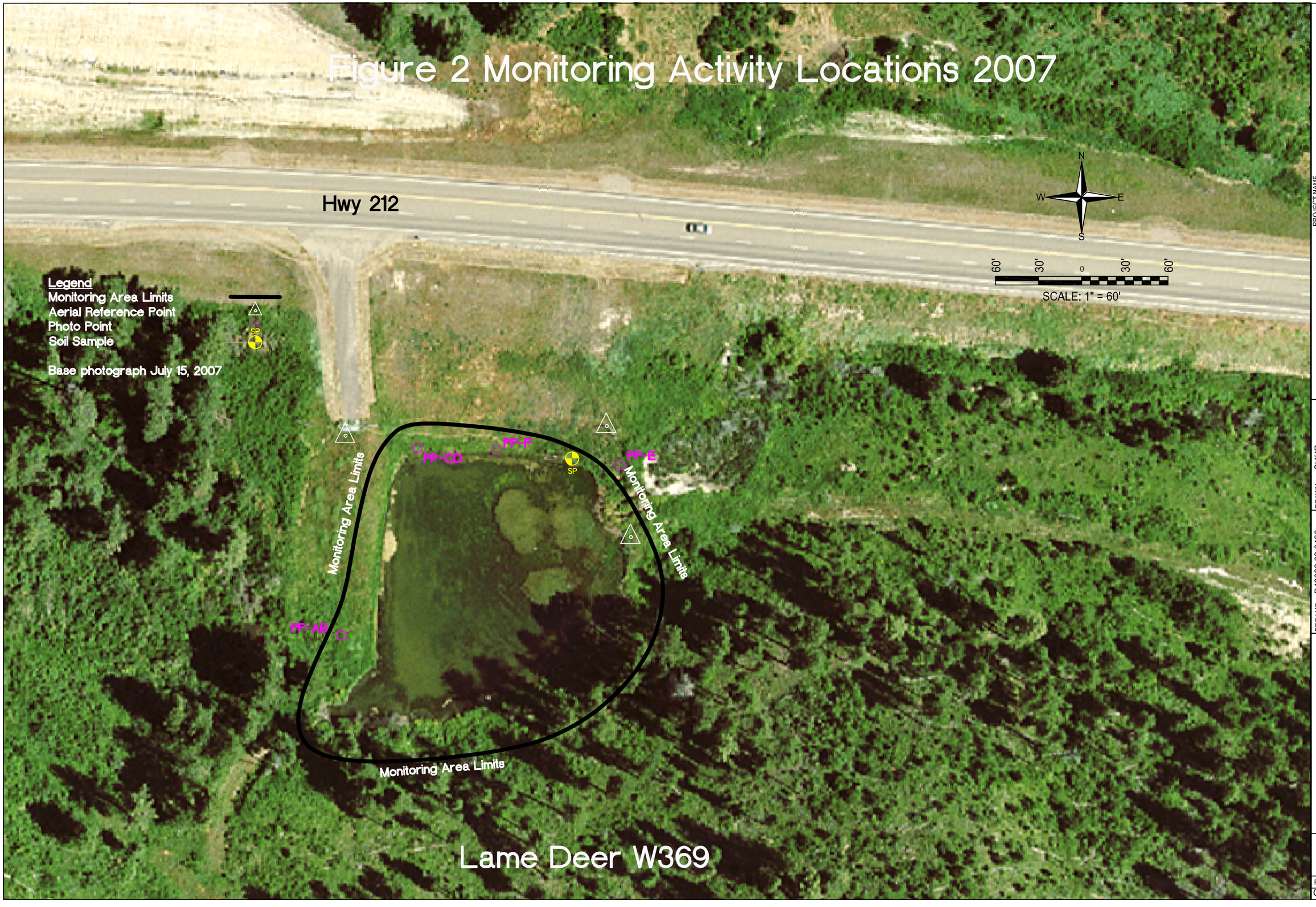
cc. Larry Sickerson
Gordon Stockstad
Ray Mengel
Bill McChesney
Tom Atkins
Diane Yates
Chris Ricciardiello
Jeanette Lostracco
file
J:\97705901\Deer\manage\Corr\finalplans.doc

Appendix E

RECREATED HWY 212 WETLANDS (WL 369 & 380):
2007 FIGURES 2 & 3
2007 COE ROUTINE WETLAND DELINEATION DATA FORMS
2007 FUNCTIONAL ASSESSMENT FORMS
2007 REPRESENTATIVE PHOTOGRAPHS

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

Figure 2 Monitoring Activity Locations 2007



PROJECT NAME
MDT LAME DEER WETLAND W369 MITIGATION

DRAWING TITLE
MONITORING ACTIVITY LOCATIONS 2007

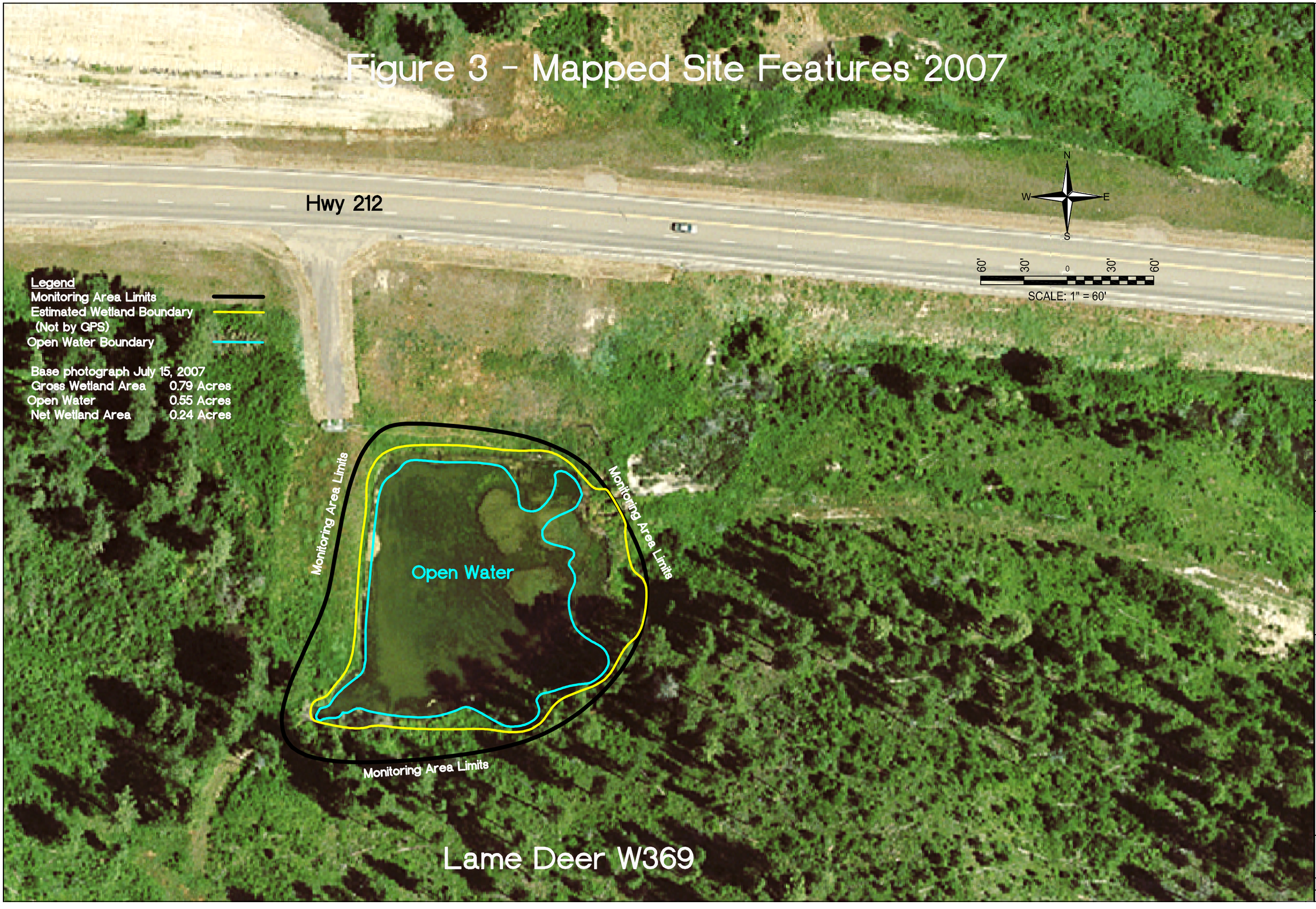
DRAWN:	SH/JR
PROJ MGR:	J. BERGLUND
CHECKED:	LB
APPV'D:	JB
PROJ NO:	B43088.00 0406
LOCATION:	LAME DEER, MT
SCALE:	1" = 60'
FILE NAME:	2007 BASE.dwg

PBSJ
3810 Valley Commons Drive
Suite 4
Bozeman, MT 59718

FIGURE
2 OF .

REV -
Oct/29/2007

Figure 3 - Mapped Site Features 2007



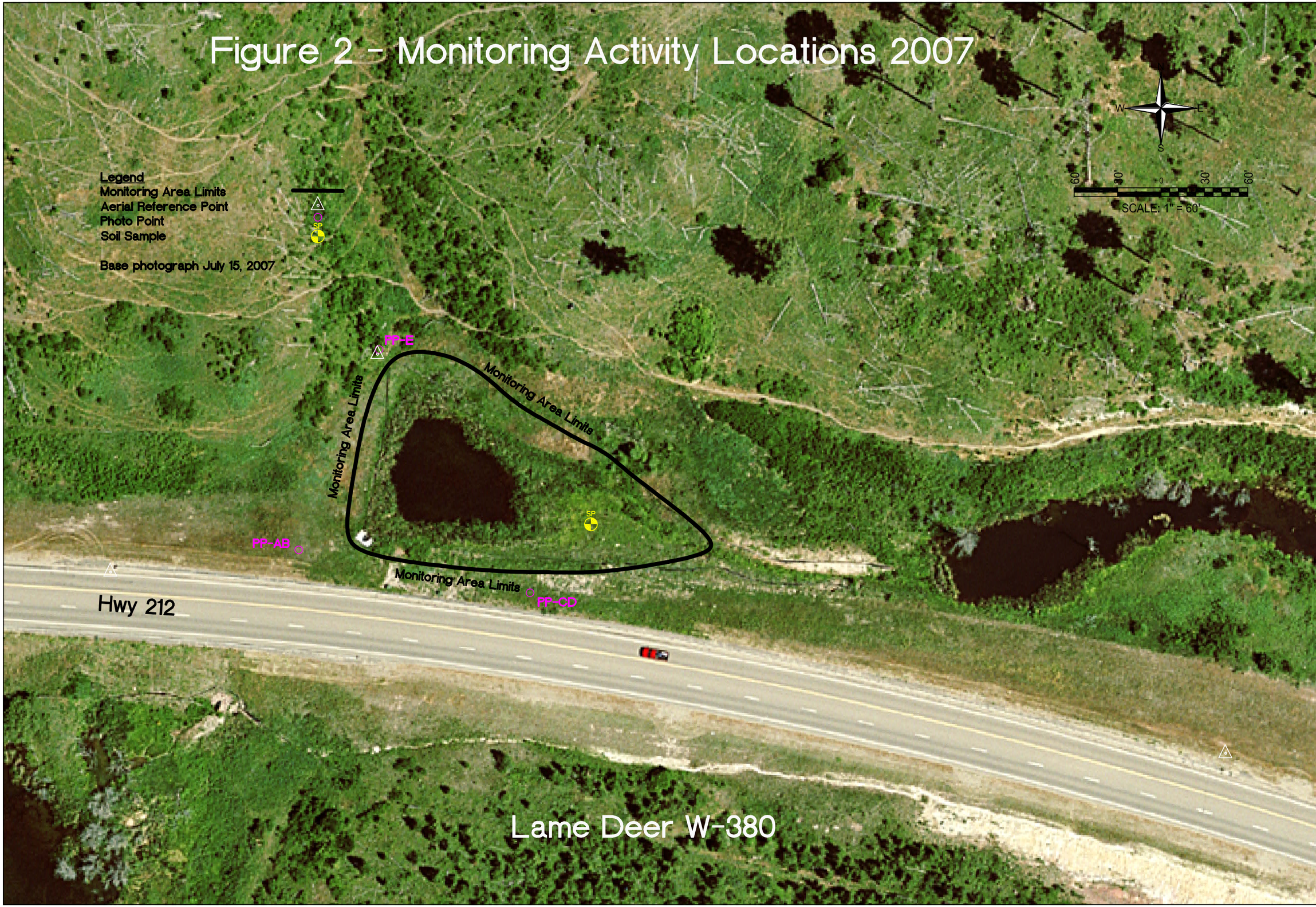
PROJECT NAME
MDT LAME DEER WETLAND W369 MITIGATION
DRAWING TITLE
MAPPED SITE FEATURES 2007

PROJ NO:	B43088.00 0406
LOCATION:	LAME DEER, MT
SCALE:	1" = 60'
FILE NAME:	2007 BASE.dwg
DRAWN:	SH/JR
PROJ MGR:	J. BERGLUND
CHECKED:	LB
APPV'D:	JB

PBSJ
3810 Valley Commons Drive
Suite 4
Bozeman, MT 59718

FIGURE
3 OF
REV -
Nov/08/2007

Figure 2 - Monitoring Activity Locations 2007



PROJECT NAME
MDT LAME DEER WETLAND W380 MITIGATION

DRAWING TITLE
MONITORING ACTIVITY LOCATIONS 2007

DRAWN: SH/JR
PROJ MGR: J. BERGLUND
CHECKED: LB
APPV'D: JB

PROJ NO: B43088.00 0406
LOCATION: LAME DEER, MT
SCALE: 1" = 60'
FILE NAME: 2007 BASE.dwg

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3810 Valley Commons Drive
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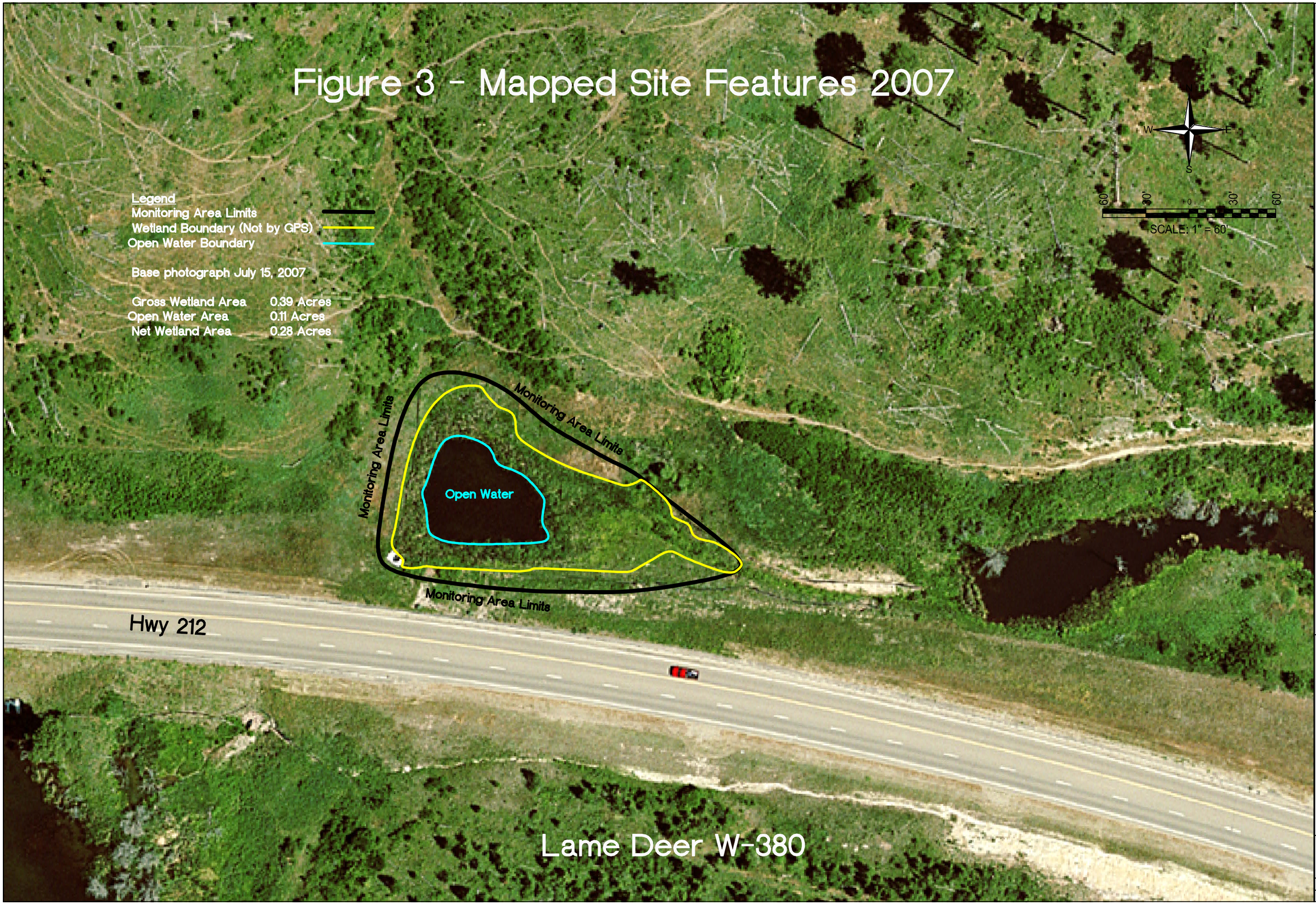
Bozeman, MT 59718

FIGURE
2 OF -

REV -
Oct/29/2007

Figure 3 - Mapped Site Features 2007



PROJECT NAME
MDT LAME DEER WETLAND W380 MITIGATION

DRAWING TITLE
MAPPED SITE FEATURES 2007

PROJ NO: B43088.00 0406	DRAWN: SH/JR		
LOCATION: LAME DEER, MT	PROJ MGR: J. BERGLUND		
SCALE: 1" = 60'	CHECKED: LB	APPVD: JB	
FILE NAME: 2007 BASE.dwg			

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FIGURE
3 OF -
REV -
Oct/29/2007

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

Project/Site:	Lame Deer			Date:	7/16/07
Applicant/Owner:	MDT			County:	Rosebud
Investigator:	LB/LWC			State:	MT
Do Normal Circumstances exist on the site:	X	Yes		No	Community ID: emergent
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?:		Yes	X	No	Plot ID: WL-369
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	GLYGRA	H	OBL	9			
2	JUNTEN	H	FACW	10			
3	CICDOU	H	No Listing	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

Wetland vegetation expanding slightly from mud slide on east end into water, otherwise water levels are so high vegtetation has not expanded into OW zone, nor up banks because of steep grade.

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake, or Tide Gauge
- Aerial Photographs
- Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: 0 (in.)
- Depth to Saturated Soil: surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- Inundated
- X Saturated in Upper 12 Inches
- X Water Marks
- Drift Lines
- X Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks:
At SP soil is saturated. ***Silt fence is now mostly in water, fully vegetated behind fence, should be removed.*** In general, water level is too high to allow emergent vegetation to colonize into the OW for more vegetated wetland acreage.

High spring flows washed out soils beside culvert, so essentially the beaver dam is what is causing the water to pond. Sediment from washout evident downstream.

SOILS

Map Unit Name (Series and Phase): Bitton-Shambo

Drainage class: well

Taxonomy (Subgroup):

Field Observations

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.
0-10	A	10YR 4/2,4/3,5/6 mixture			Silt clay

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
____	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X	Yes	____	No	
Wetland Hydrology Present?	X	Yes	____	No	
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:

Water too deep to allow significant expansion of emergent vegetation into OW area. Beaver dam causing water to pond, soils around culvert washed out during spring high flows, large trench observed and photos included in report. Leopard frogs observed.

Silt fence should be removed.

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

1. Project Name: Lame Deer-East **2. Project #:** _____ **Control #:** _____

3. Evaluation Date: 7/16/2007 **4. Evaluator(s):** LB/PBSJ **5. Wetland / Site #(s):** W-369

6. Wetland Location(s) i. T: 2 S **R:** 42 E **S:** 28 **T:** __ N **R:** __ E **S:** _____

ii. Approx. Stationing / Mileposts: _____

iii. Watershed: 10100003 **GPS Reference No. (if applies):** _____

Other Location Information: _____

7. A. Evaluating Agency MDT

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

B. Purpose of Evaluation:
- ☐ Wetlands potentially affected by MDT project
- ☐ Mitigation wetlands; pre-construction
- ☒ Mitigation wetlands; post-construction
- ☐ Other

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

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS [1]	SYSTEM [2]	SUBSYSTEM [2]	CLASS [2]	WATER REGIME [2]	MODIFIER [2]	% OF AA
Depression	Palustrine	None	Unconsolidated Bottom	Permanently Flooded	Excavated	36
Depression	Palustrine	None	Aquatic Bed	Permanently Flooded	Excavated	34
Depression	Palustrine	None	Emergent Wetland	Intermittently Exposed	---	28
Depression	Palustrine	None	Scrub-Shrub Wetland	Seasonally Flooded	---	2

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

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

12. GENERAL CONDITION OF AA

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

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

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

ii. Prominent weedy, alien, & introduced species: Canada thistle

iii. Briefly describe AA and surrounding land use / habitat: HWY 212 is upslope from area.

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

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

Comments: There are some shrubs on opposite bank where the bank is steep steep; the pond area has an aquatic bed and the emergent wetland fring is located around ~60% of the perimeter.

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	---	.8 (H)	---	---	---	---	---

If documented, list the source (e.g., observations, records, etc.)**:** LB Observed in July 2007.

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)	☒High								☐Moderate								☐Low			
Class Cover Distribution (all vegetated classes)	☐Even				☒Uneven				☐Even				☐Uneven				☐Even			
Duration of Surface Water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12)	--	--	--	--	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)			
	☒ Exceptional	☐ High	☐ Moderate	☐ Low
Substantial	--	--	--	--
Moderate	.9 (H)	--	--	--
Low	--	--	--	--

Comments: New sighting of *Rana pipiens*; ducks must use this open water but they have not been observed during the monitoring event.

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	☒ Permanent/Perennial			☐ Seasonal / Intermittent			☐ Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects (*e.g.* submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading – 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	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)			
	☐ Exceptional	☒ High	☐ Moderate	☐ Low
Native game fish	--	--	--	--
Introduced game fish	--	.8 (H)	--	--
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	☐ ≥ 10 acres			☐ <10, >2 acres			☒ ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	--	--	--	--	--	--	--	--	.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:** Culvert filled with beaver sticks and sediment. The beaver dam is construted across outlet. The side of the outlet cuvlert has been at least 50% washed out.

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.	☐ >5 acre feet			☒ <5, >1 acre feet			☐ ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	--	--	--	.8 (H)	--	--	--	--	--
Wetlands in AA flood or pond **< 5 out of 10 years**	--	--	--	--	--	--	--	--	--

Comments: _____

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

Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.
If no wetlands in the AA are subject to such input, check NA above.

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

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	☒ ≥ 70%		☐ < 70%		☐ ≥ 70%		☐ < 70%	
Evidence of flooding or ponding in AA	☒ Yes	☐ No	☐ Yes	☐ No	☐ Yes	☐ No	☐ Yes	☐ No
AA contains **no or restricted outlet**	1 (H)	--	--	--	--	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--

Comments: Outlet is plugged by debris and beaver dam.

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

Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body 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		
	☒Permanent / Perennial	☐Seasonal / Intermittent	☐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	☐ Vegetated component >5 acres						☐ Vegetated component 1-5 acres						☒ Vegetated component <1 acre					
B	☐ High		☐ Moderate		☐ Low		☐ High		☐ Moderate		☐ Low		☒ High		☐ Moderate		☐ Low	
C	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☒Y	☐N	☐Y	☐N	☐Y	☐N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	.7M	--	--	--	--	--
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	☐rare	☐common	☐abundant	☐rare	☒common	☐abundant	☐rare	☐common	☐abundant
Low disturbance at AA (#12i)	--	--	--	--	.6M	--	--	--	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments:

14L. RECREATION / EDUCATION POTENTIAL

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

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

iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?
☒ **Yes** [Proceed to 14L (ii) and then 14L(iv).] ☐ **No** [Rate as low in 14L(iv)]

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

Ownership	Disturbance at AA from #12(i)		
	☐ Low	☐ Moderate	☐ High
Public ownership	--	--	--
Private ownership	--	--	--

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	0.80	1	
C. General Wildlife Habitat	H	0.90	1	
D. General Fish/Aquatic Habitat	H	0.8	1	
E. Flood Attenuation	L	0.20	1	
F. Short and Long Term Surface Water Storage	H	0.80	1	
G. Sediment/Nutrient/Toxicant Removal	H	1.00	1	
H. Sediment/Shoreline Stabilization	H	1.00	1	
I. Production Export/Food Chain Support	M	0.70	1	
J. Groundwater Discharge/Recharge	H	1.00	1	
K. Uniqueness	M	0.60	1	
L. Recreation/Education Potential	H	1.00	1	
	Totals:	8.80	12.00	
	Percent of Total Possible Points:		**73%** (Actual / Possible) x 100 [rd to nearest whole #]	

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

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following Category II criteria. If not satisfied, proceed to Category IV.)
- ☐ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; **or**
- ☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish / Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☒ Percent of total possible points is > 65%.

☐ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied.)

Category IV Wetland: (Criteria for Categories I or II are not satisfied **and** all of the following criteria are met; If not satisfied, proceed to Category III.)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export / Food Chain Support; **and**
- ☐ Percent of total possible points is < 30%.

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

☐ **I** ☒ **II** ☐ **III** ☐ **IV**

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

Project/Site:	Lame Deer			Date:	7/16/07
Applicant/Owner:	MDT			County:	Rosebud
Investigator:	LB/LWC			State:	MT
Do Normal Circumstances exist on the site:	X	Yes		No	Community ID: emergent
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is the area a potential Problem Area?:		Yes	X	No	Plot ID: WL-380
(If needed, explain on reverse.)					

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	JUNTEN	H	FAC	9			
2	SALBEB	S	FACW	10			
3	SCIPAL	H	OBL	11			
4	TYPLAT	H	OBL	12			
5	MEDLUP	H	FAC	13			
6	CICDOU	H	--	14			
7	SALEXI	H	OBL	15			
8	GLYLEP	H	FACU	16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 6/8

Wetland vegetation community well developed and diverse, expansion limited by steep embankment on all sides except up drainage to the east adjacent to the creek where expansion is occurring 1-2 feet/year.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: 0 (in.)
- Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- \- Inundated
- X Saturated in Upper 12 Inches
- X Water Marks
- \- Drift Lines
- \- Sediment Deposits
- \- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:

High spring flows likely increased saturation levels around perimeter and up-drainage during early summer.

SOILS

Map Unit Name: Bitton-Shambo
Drainage Class: well
(Series and Phase):
Taxonomy (Subgroup):
Field Observations
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.
0-10	B	10YR 2/2			Silt gravelly loam

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
____	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X	Yes	____	No	
Wetland Hydrology Present?	X	Yes	____	No	
Hydric Soils Present?	X	Yes	____	No	Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:

Wetland fringe appears fully developed, but may expand slightly on east end where stream enters wetland fringe, especially if there is another high spring flow year as in 2007.

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

1. Project Name: Lame Deer-East **2. Project #:** B43088.00-0206 **Control #:** _____

3. Evaluation Date: 7/16/2007 **4. Evaluator(s):** LB/PBSJ **5. Wetland / Site #(s):** W-380

6. Wetland Location(s) i. T: 2 S **R:** 42 E **S:** 28 **T:** __ N **R:** __ E **S:** _____

ii. Approx. Stationing / Mileposts: _____

iii. Watershed: 10100003 **GPS Reference No. (if applies):** _____

Other Location Information: _____

7. A. Evaluating Agency MDT

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

B. Purpose of Evaluation:

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

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

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS [1]	SYSTEM [2]	SUBSYSTEM [2]	CLASS [2]	WATER REGIME [2]	MODIFIER [2]	% OF AA
Depression	Palustrine	None	Unconsolidated Bottom	Permanently Flooded	Excavated	28
---	---	---	Emergent Wetland	Saturated	---	70
Riverine	Riverine	Upper Perennial	Aquatic Bed	Permanently Flooded	---	2
---	---	---	---	---	---	

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

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

12. GENERAL CONDITION OF AA

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

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

Comments: (types of disturbance, intensity, season, etc.) Traffic on Hwy. 212

ii. Prominent weedy, alien, & introduced species: None noted within the actual assessed wetland acreage.

iii. Briefly describe AA and surrounding land use / habitat: HWY 212 is upslope from area; Reservation land, logged and forested mosaic.

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

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

Comments: aquatic and emergent veg

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)	☐High								☒Moderate								☐Low			
Class Cover Distribution (all vegetated classes)	☐Even				☐Uneven				☐Even				☒Uneven				☐Even			
Duration of Surface Water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	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)			
	☒ Exceptional	☐ High	☐ Moderate	☐ Low
Substantial	--	--	--	--
Moderate	.9 (H)	--	--	--
Low	--	--	--	--

Comments: The surrounding upland and stream corridor is prime habitat for ungulates and migratory birds; waterfowl likely use pond but none have been observed..

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	☒Permanent/Perennial			☐Seasonal / Intermittent			☐Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects (*e.g.* submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading – 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	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)			
	☐ Exceptional	☒ High	☐ Moderate	☐ Low
Native game fish	--	--	--	--
Introduced game fish	--	.8 (H)	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: bass

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	☐ ≥ 10 acres			☐ <10, >2 acres			☒ ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	--	--	--	--	--	--	--	--	--
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.	☐ >5 acre feet			☒ <5, >1 acre feet			☐ ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	--	--	--	.8 (H)	--	--	--	--	--
Wetlands in AA flood or pond **< 5 out of 10 years**	--	--	--	--	--	--	--	--	--

Comments: _____

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

Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.
If no wetlands in the AA are subject to such input, check NA above.

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

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	☒ ≥ 70%		☐ < 70%		☐ ≥ 70%		☐ < 70%	
Evidence of flooding or ponding in AA	☒ Yes	☐ No	☐ Yes	☐ No	☐ Yes	☐ No	☐ Yes	☐ No
AA contains **no or restricted outlet**	1 (H)	--	--	--	--	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--

Comments: _____

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

Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body 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		
	☒Permanent / Perennial	☐Seasonal / Intermittent	☐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	☐ Vegetated component >5 acres						☐ Vegetated component 1-5 acres						☒ Vegetated component <1 acre					
B	☐ High		☐ Moderate		☐ Low		☐ High		☐ Moderate		☐ Low		☐ High		☒ Moderate		☐ Low	
C	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☒Y	☐N	☐Y	☐N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.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: 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	☐rare	☐common	☐abundant	☐rare	☐common	☐abundant	☐rare	☒common	☐abundant
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments:

14L. RECREATION / EDUCATION POTENTIAL

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

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

iii. Based on the location, diversity, size, and other site attributes, is there a strong potential for recreational or educational use?
☒ **Yes** [Proceed to 14L (ii) and then 14L(iv).] ☐ **No** [Rate as low in 14L(iv)]

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

Ownership	Disturbance at AA from #12(i)		
	☐ Low	☐ Moderate	☐ High
Public ownership	--	--	--
Private ownership	--	--	--

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	H	0.80	1	
G. Sediment/Nutrient/Toxicant Removal	H	0.90	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	--	
K. Uniqueness	M	0.40	1	
L. Recreation/Education Potential	H	1.00	1	
	Totals:	8.50	12.00	
		Percent of Total Possible Points:	**71%** (Actual / Possible) x 100 [rd to nearest whole #]	

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

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following Category II criteria. If not satisfied, proceed to Category IV.)
- ☒ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; **or**
- ☒ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish / Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☒ Percent of total possible points is > 65%.

☐ **Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied.)

Category IV Wetland: (Criteria for Categories I or II are not satisfied **and** all of the following criteria are met; If not satisfied, proceed to Category III.)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export / Food Chain Support; **and**
- ☐ Percent of total possible points is < 30%.

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

☐ **I** ☒ **II** ☐ **III** ☐ **IV**

LAME DEER 369 WETLAND MITIGATION SITE 2007

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 fro below road edge **Compass Reading:** 124°

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

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

LAME DEER 380 WETLAND MITIGATION SITE 2007

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°

Appendix F

BIRD SURVEY PROTOCOL
GPS PROTOCOL

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

BIRD SURVEY PROTOCOL

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

Survey Area

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

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

Survey Time

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

Data Recording

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

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

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

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

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

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

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

Other Fields

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

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

Date: Record the date of the bird survey.

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

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

GPS MAPPING AND AERIAL PHOTO REFERENCING PROCEDURE

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

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

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

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

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