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**MONTANA DEPARTMENT OF TRANSPORTATION  
WETLAND MITIGATION MONITORING REPORT: YEAR 2006**

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*Ridgeway Wetland Complex  
Ekalaka, Montana*



Prepared for:

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

December 2006

Project No: B43054.00 – 0412

Prepared by:

**POST, BUCKLEY, SCHUH, AND JERNIGAN**  
P.O. Box 239  
Helena, MT 59624



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## 1.0 INTRODUCTION

This annual report summarizes methods and results of the sixth year of monitoring at the Montana Department of Transportation's (MDT) Ridgeway Complex mitigation site. The Ridgeway wetland complex was created by the Bureau of Land Management (BLM) and MDT to provide wetland mitigation credits to address impacts associated with MDT projects in Watershed #16 located in MDT District 4 (Glendive District). The complex, comprised of sixteen constructed impoundments, is located in Carter County, Montana, in Section 36, Township 4 South, Range 57 East and Sections 31-35, Township 4 South, Range 58 East (**Figure 1**). Elevations in the complex range from approximately 3,300 to 3,400 feet.

Eight wetlands were created during the summer of 2000 and an additional eight were completed in January of 2001. The objective for the Ridgeway Complex was to maximize the surface acres of each individual project to create 50 acres of shallow waterfowl habitat (USDA 1999) (**Appendix D**). Several construction designs were employed to create the impoundments (USDA 1990); 15 of the 16 impoundments were originally intended to have a surface area of 3.5 acres and one impoundment (#3) 22 acres for a potential total of 74.5 surface acres (Rau 1999) (**Appendix D**).

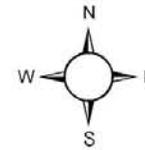
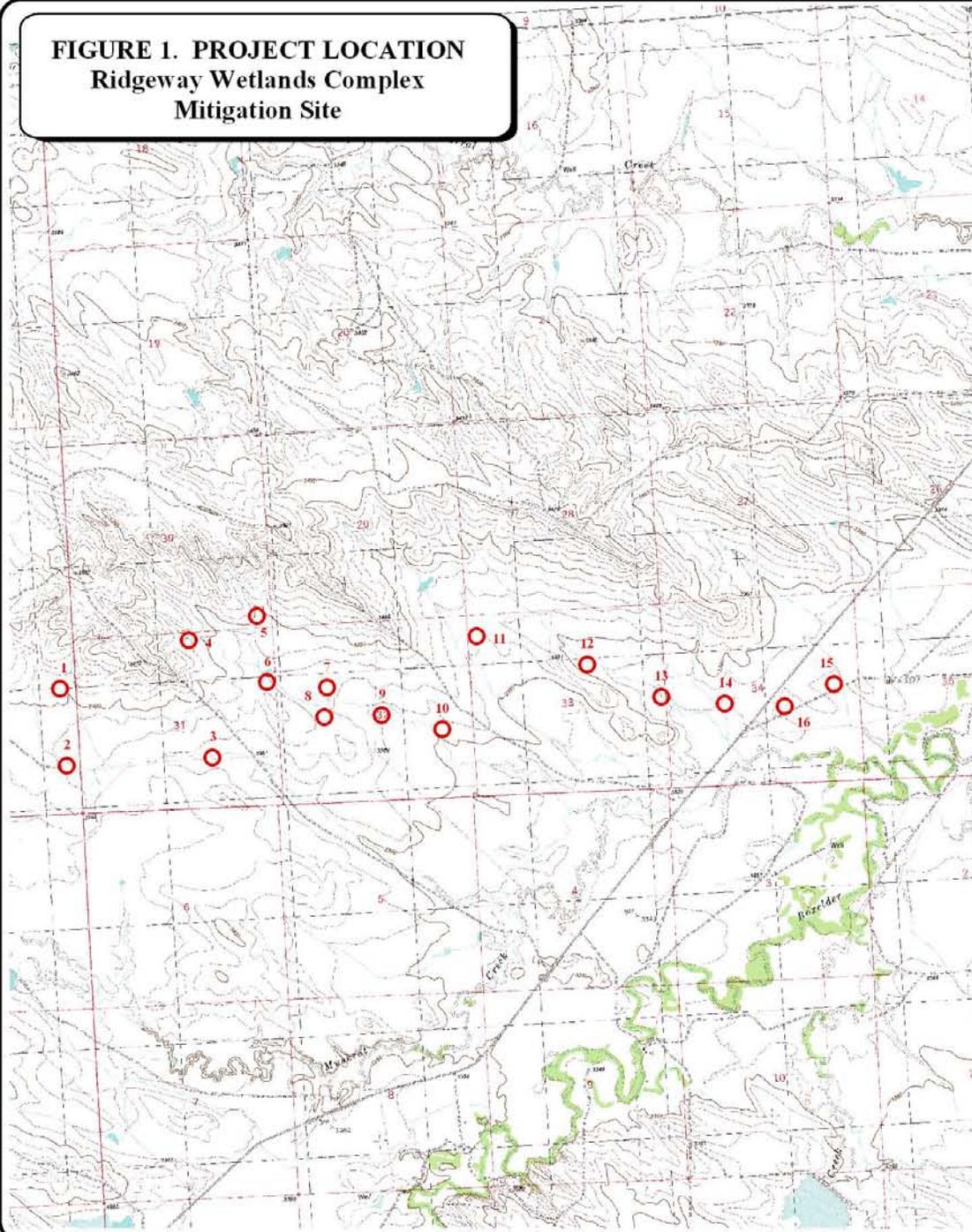
For this monitoring report, Wetland-9 (W-9) was sampled for the sixth season according to the full sampling protocol on July 19, 2006. Wetland 9 was chosen out of the sixteen constructed open-water impoundments because of its representative wetland qualities. The remainder of the fifteen sites, impoundments W-1 to W-8 and W-10 to W-16, were monitored on July 18 and 19, 2006. All sites are shown on **Figure 1** and on **Figure 4** in **Appendix J**.

## 2.0 METHODS

### 2.1 Monitoring Dates and Activities

All sixteen wetland sites were investigated for wetland development on July 18 and 19, 2006. The Wetland Mitigation Site Monitoring Form data (**Appendix B**) were collected for W-9 at this time. Activities and information collected included: wetland delineation; wetland/open water boundary mapping; vegetation community mapping; vegetation transect data; soils data; hydrology data; bird and general wildlife use; photograph points; GPS data points; functional assessment; and, maintenance needs of inflow and outflow structures.

**FIGURE 1. PROJECT LOCATION**  
**Ridgeway Wetlands Complex**  
**Mitigation Site**



1: 55,000

PROJECT #: 130091.025  
 DATE: APRIL 2001  
 LOCATION:  
 PROJECT MANAGER: B. DUTTON  
 DRAWN BY: B. NOECKER



1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

## 2.2 Hydrology

Wetland hydrology indicators for all sites were recorded using procedures outlined in the US Army Corps' (COE) 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on the **COE Routine Wetland Delineation Data Forms (W-9 in Appendix B; W-1 to W-8 and W-10 to W-16 in Appendix H)**. The boundary between emergent vegetation and open water for all sites was mapped onto the 2006 aerial photograph (**W-9 on Figure 3 of Appendix A; W-1 to W-8 and W-10 to W-16 on Figures 3 in Appendix G**). There were no groundwater monitoring wells at the site. Precipitation data for the year 2006 was compared to the 1952 – current 2006 average (WRCC 2006).

## 2.3 Vegetation

General vegetation types for W-9 were delineated onto an aerial photograph during the site visit (**Figure 3 in Appendix A**). Coverage of the dominant species in each community type was listed on the Wetland Mitigation Site Monitoring Form (**Appendix B**). A comprehensive plant species list for the entire site was compiled and updated as new species were encountered. Woody species were not planted on this site.

One transect was established at W-9 during the 2001 monitoring event to represent the range of current vegetation conditions at this wetland. The transect was lengthened in 2002. The location of the transect is shown on **Figure 2 in Appendix A**. Percent cover for each species was recorded on the vegetation transect data form (**Wetland Mitigation Site Monitoring Form in Appendix B**). The transect was used to evaluate changes in species composition over time, especially the establishment and increase of hydrophytic vegetation. Vegetation data at one wetland and one upland sample point were recorded onto the **COE Routine Wetland Determination Data Forms (Appendix B)**.

The presence of emergent vegetation was noted on the 2006 aerial photographs for Wetlands 1 to 8 and 10 to 16 (**Figures 3 in Appendix G**); photo and sample point locations are depicted on **Figures 2 in Appendix G**. At each wetland, vegetation data at one wetland and one upland sample point were recorded on **COE Routine Wetland Delineation Data Forms (Appendix H)**. Photos showing representative vegetation were taken of Wetlands sites 1 to 8 and 10 to 16; photos and a photograph log are included in **Appendix I**.

## 2.4 Soils

Soils were evaluated during the site visit at W-9 according to the procedure outlined in the 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Soil data were recorded for each wetland determination point on the **COE Routine Wetland Delineation Data Form (Appendix B)**.

Soils were evaluated during the site visit at Wetlands 1 to 8 and 10 to 16 and data were recorded onto the **COE Routine Wetland Delineation Data Forms (Appendix H)**.

## 2.5 Wetland Delineation

A wetland delineation for W-9 was conducted within the assessment area according to the 1987 Wetland Delineation Manual (Environmental Laboratory 1987). 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)**. The wetland/upland boundary was used to calculate the wetland area (**Figure 3 in Appendix A**).

A wetland delineation for Wetlands 1 to 8 and 10 to 16 was completed according to the 1987 Wetland Delineation Manual (Environmental Laboratory 1987) (**Figures 3 in Appendix G**). 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 H**). The wetland/upland boundary was used to calculate the wetland area (**Figures 3 in Appendix G**).

## 2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations were recorded on the Wetland Mitigation Monitoring Form for W-9 during the site visit (**Appendix B**); observations of wildlife at all other wetland sites were recorded in the field notebook. Indirect use indicators were also recorded including tracks, scat and burrows. A comprehensive wildlife species list for the entire site was compiled and updated as new species were encountered.

## 2.7 Birds

Bird observations for W-9 were recorded during the site visit according to the established Bird Survey Protocol (**Appendix E**). A general, qualitative bird list has been compiled using these observations by Land & Water, MDT and Bureau of Land Management (BLM) personnel; a BLM biologist assisted with wildlife observation data collection on July 18, 2006.

## 2.8 Macroinvertebrates

One macroinvertebrate sample was collected at W-9 during the site visit following the 2001 protocol (**Appendix F**). Samples were preserved as outlined in the Macroinvertebrate Sampling Protocol (**Appendix F**). The approximate location is indicated on **Figure 2 (Appendix A)**.

## 2.9 Functional Assessment

Functional assessments were completed for each wetland site using the 1999 MDT Montana Wetland Assessment Method (Berglund 1999) (**Appendix B**). Field data necessary for this assessment were collected on a condensed data sheet with the remainder of the assessment completed in the office. The Functional Assessment for W-9 is included in **Appendix B** while Functional Assessments for all other wetlands site are included in **Appendix H**.

## 2.10 Photographs

Wetland-9 photos were taken showing the current land use surrounding the 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. Photographs of W-9 are included in **Appendix C** and photo points are shown on **Figure 2** in **Appendix A**.

The remaining wetland sites, 1 to 8 and 10 to 16, were photographed from two locations during the 2006 season (**Figures 2** in **Appendix G**). The wetland photos and photo logs are included in **Appendix H**. All photographs were taken using a digital camera. A digital orthophoto quad (DOQ) was downloaded from the Natural Resources Information System (NRIS) and each of the wetland locations were applied using a CAD system (**Figure 4** in **Appendix J**).

## 2.11 GPS Data

During the 2002 monitoring season, survey points were collected using a resource grade Trimble, Geoexplorer III hand-held GPS unit for all wetlands (**Appendix E**). Points collected included: the vegetation transect beginning and ending locations; survey points at three landmarks recognizable on the air photo for purposes of line fitting to the topography; and the wetland boundary (**Figures 2** and **3** in **Appendices A** and **G**). Changes in the wetland boundary during 2006 were adjusted on the aerial photo by hand. Photo point location data at all other wetland sites were collected using GPS in 2001 (**Figures 2** in **Appendix G**).

## 2.12 Maintenance Needs

The conditions of the W-9 inlet and dike were examined during the monitoring visit for maintenance needs. The position of all wetland sites relative to drainage direction were examined on the ground and on the aerial photograph for improvement opportunities (**Figure 4** in **Appendix J**).

## 3.0 RESULTS

### 3.1 Hydrology

The source of hydrology at W-9 is an intermittent stream. During the July 19, 2006 site visit, 6% of the assessment area was inundated with approximately 0-4 feet of standing water. The emergent wetland area to the southeast of the open water had shallow inundation and was nearly 100% vegetated. The only control structure is the constructed dike; no outflow pipe is installed in the dam.

According to the Western Regional Climate Center (WRCC 2006), the Ridgeway 1S station annual mean (1952 – current 2006) precipitation was 13.23 inches; the 2005 total precipitation was 14.8 inches or 111% of the mean. The total mean precipitation from January – April was 2.57 inches and in 2006, 4.26 inches of precipitation was recorded for the same time period. In April, 2006 3.76 inches of precipitation was recorded (11 days of data are missing) as a result of

a large snow event. This event and the greater than average yearly precipitation in 2005 likely contributed to the increase in wetland size throughout the Ridgeway Complex.

### 3.2 Vegetation

Vegetation species identified on the W-9 site are presented in **Table 1** and in the **Monitoring Form (Appendix B)**. Eight dominant vegetation communities were mapped for the mitigation area (**Figure 3 in Appendix A**). The communities include: Type 1, *Artemesia tridentate/Atriplex argentea*; Type 2, *Typha latifolia*; Type 3, *Alisma plantago-aquatica*; Type 4, *Eleocharis palustris*; Type 5, *Hordeum jubatum*, Type 6, *Rumex crispus/Hordeum jubatum*, Type 7, *Rumex crispus*, and Type 8, *Spartina gracilis*. Dominant species within each community are listed on

**Table 1: 2001-2006 vegetation species list for the Ridgeway Complex Wetland Mitigation Sites.**

Scientific Name <sup>1</sup>	Region 4 (North Plains) Wetland Indicator status <sup>2</sup>
<i>Agropyron smithii</i>	FACU
<i>Alisma plantago-aquatica</i>	OBL
<i>Alopecurus pratensis</i>	FACW
<i>Alopecurus aequalis</i>	OBL
<i>Artemesia tridentata</i>	- (UPL)
<i>Atriplex argentea</i>	FACU
<i>Beckmannia syzigachne</i>	OBL
<i>Bouteloua gracilis</i>	- (UPL)
<i>Eleocharis acicularis</i>	OBL
<i>Eleocharis palustris</i>	OBL
<i>Festuca idahoensis</i>	- (UPL)
<i>Grindelia gracifolia</i>	- (UPL)
<i>Hordeum jubatum</i>	FACW
<i>Rumex crispus</i>	FACW
<i>Sagittaria cuneata</i>	OBL
<i>Salix</i> sp	FACW-OBL
<i>Scirpus heterochaetus</i>	OBL
<i>Scirpus maritimus</i>	OBL
<i>Spartina gracilis</i>	FACW
<i>Typha latifolia</i>	OBL
<i>Veronica peregrina</i>	OBL

<sup>1</sup> **Bolded** species indicate those documented within the analysis area for the first time in 2006.

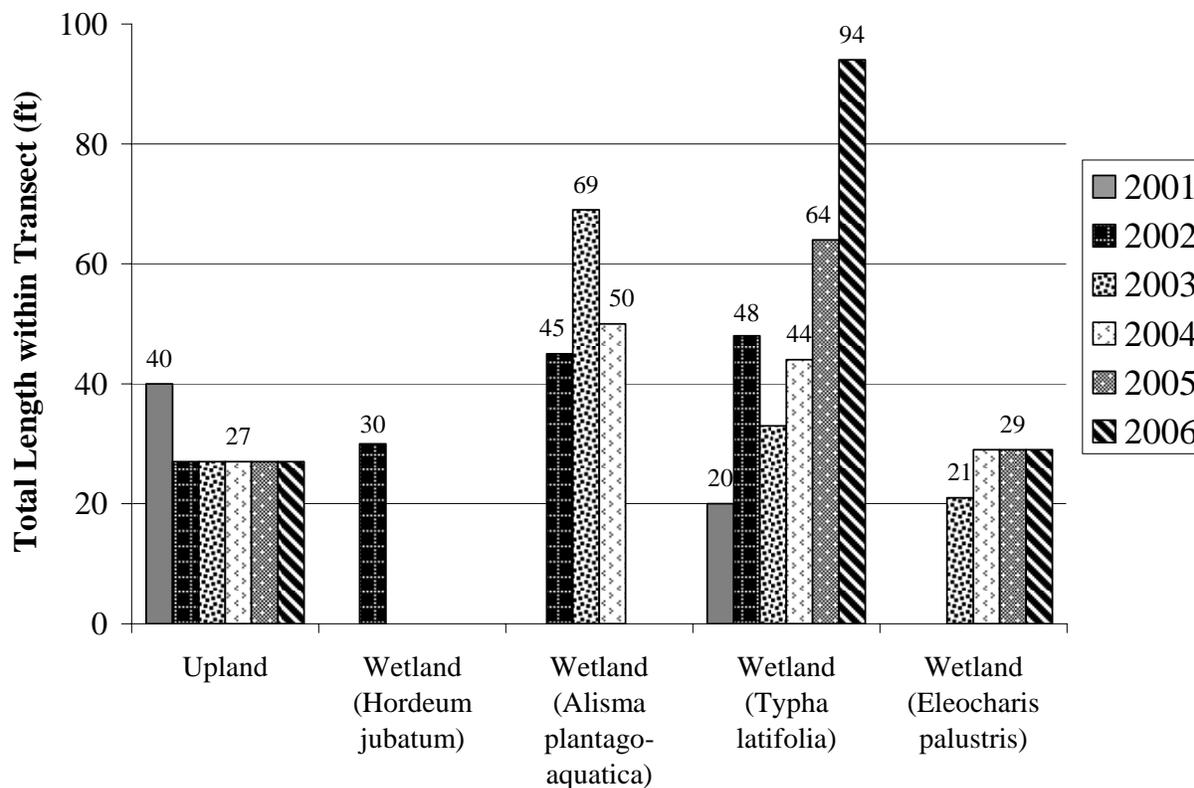
<sup>2</sup> Species either not included or classified as “non-indicator” in the National List of Plant Species that Occur in Wetlands: North Plains (Region 4); status in parentheses are probable and based on biologist's experience.

the monitoring form (**Appendix B**). Approximately 94% of the W-9 site has developed wetland vegetation. The site continues to increase in vegetation complexity. The vegetation transect results are detailed in the **Monitoring Form (Appendix B)** and mapped onto **Figure 3 (Appendix A)**. W-9 data are summarized in tabular format (**Table 2**) and graphically illustrated (**Chart 1**). The transect was lengthened in 2002 from 60 to 150 feet. The percent cover by hydrophytic species has increased along the transect as a result of the increase in emergent vegetation cover within the former open water zone (**Table 2** and **Chart 1**).

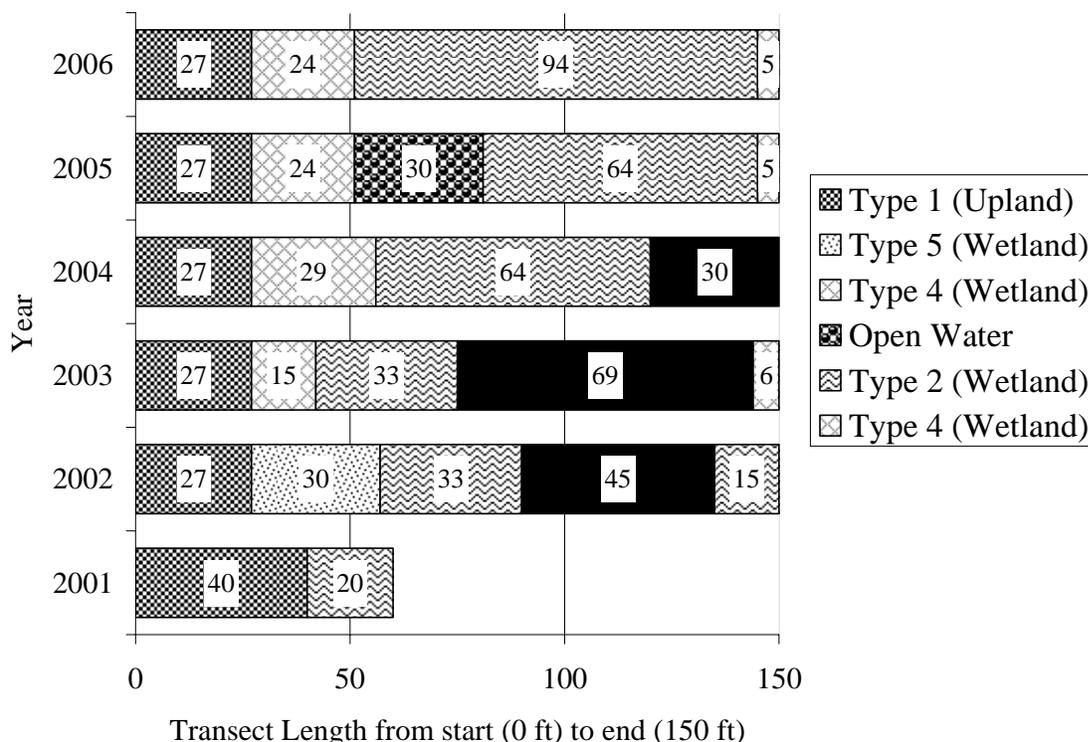
**Table 2: 2001-2006 transect data summary for W-9 for all years monitored.**

Monitoring Year	2001	2002	2003	2004	2005	2006
Transect Length (feet)	60	150	150	150	150	150
# Vegetation Community Transitions along Transect	2	5	5	5	5	3
# Vegetation Communities along Transect	2	4	4	4	4	3
# Hydrophytic Vegetation Communities along Transect	1	3	3	3	2	2
Total Vegetative Species	7	12	9	11	10	8
Total Hydrophytic Species	4	6	5	7	6	6
Total Upland Species	3	3	4	4	4	2
Estimated % Total Vegetative Cover	53	66	78	89	65	91
% Transect Length Comprised of Hydrophytic Vegetation Communities	33	82	82	82	69	82
% Transect Length Comprised of Upland Vegetation Communities	67	18	18	18	13	18
% Transect Length Comprised of Unvegetated Open Water	0	0	0	0	20	0
% Transect Length Comprised of Bare Substrate	0	0	0	0	0	0

**Chart 1: Length of vegetation communities along Transect 1 at W-9 for each year monitored.**



**Chart 2: Transect maps showing vegetation types at W-9 from the start (0 feet) to the end of transect (60 feet in 2001 and 150 feet in 2002-2006). Vegetation species within community types are not static across years.**



### 3.3 Soils

The site was mapped as part of the Carter County Soil Survey (NRCS 2003). The dominant soils at W-9 are the Bickerdyke clays. This soil type is typical of sedimentary plains. Bickerdyke is a non-hydric soil. Soils were sampled at one wetland (SP-1) and one upland location (SP-2) (**Appendix B**). At SP-1 the soil was a dark grayish brown (2.5Y 4/2) silty clay at a depth of 10 inches and included strong brown (7.5YR 4/6) mottles. The soil was saturated to the surface. Soil at SP-2 at a depth of 10 inches was a dark grayish brown (2.5Y 4/2) silty clay. No saturation was noted. Soil data for each sample point within the 15 other sites are included on the Monitoring Forms (**Appendix H**).

### 3.4 Wetland Delineation

The delineated wetland boundary at Wetland 9 is depicted on **Figure 3 (Appendix A)**. The 2006 wetland boundary encompassed 5.65 acres of gross wetland area, a 32% increase since 2005, and included 0.32 acre of open-water habitat. The net wetland area was 5.33 acres; a 57% increase since 2005. The W-9 **COE Forms** are included in **Appendix B**.

In 2003, seven of the Ridgeway Complex constructed pond sites had not developed into wetlands (**Table 3**). In 2004, the number of undeveloped sites decreased to five. In 2005, the number of undeveloped sites decreased to three: W-1, W-15 and W-16. In 2006, only sites 14, 15, and 16 did not qualify as a wetland as a result of a lack of hydrophytic vegetation.

**Table 3: 2006 wetland determination results for all Ridgeway Complex Wetland Mitigation Sites.**

SITE	WETLAND DETERMINATION <sup>1</sup>			ACREAGE			COMMENTS
	Vegetation	Hydrology	Soils	Open Water <sup>2</sup>	Net Wetland	Gross Wetland Area <sup>3</sup>	
W-1	X	X	X	0.75	1.11	1.86	Net wetland area has increased 100% since 2005.
W-2	X	X	X	0.42	6.31	6.73	Net wetland vegetation increased 20% since 2005.
W-3	X	X	X	0.80	3.51	4.31	Net wetland area increased 7% since 2005.
W-4	X	X	X	0.40	0.57	0.97	Nets wetland area increased 5% since 2005.
W-5	X	X	X	0.51	1.63	2.14	Nets wetland area increased 104% since 2005.
W-6	X	X	X	0.16	6.58	6.74	Net wetland area has increased 2% since 2005.
W-7/8	X	X	X	1.06	4.96	6.02	Net wetland area has increased 708% since 2005. Entire area north of the berm was completely inundated at the time of the survey, which included W-7 and 8 and the central pond. The wetland area associated with the central pond was never included in the monitoring effort (it was constructed before the mitigation effort); given the whole area has become one wetland, it is now inadvertently included.
W-9	X	X	X	0.32	5.33	5.65	Net wetland area has increased 57% since 2005.
W-10	X	X	X	0.96	4.16	5.12	Net wetland area has increased 427% since 2005. Entire area north of the berm was completely inundated at the time of the survey, including the area adjacent to the berm and southwest of the pond. This wetland area was never included in the monitoring effort; given the whole area has become one wetland, it is now inadvertently included. The inlet stream was also inundated in the vicinity of the berm and water was observed in the streambed approximately half the distance to W-9.
W-11	X	X	X	0.82	0.07	0.89	Net wetland area has increased 133% since 2005 (somewhat misleading, 0.03 acre to 0.07 acre).
W-12	X	X	X	0.59	4.21	4.80	Net wetland area has increased 21% since 2005.
W-13	X	X	X	0.51	3.50	4.01	No net wetland area increase since 2005.
W-14		X		1.32	0	1.32	Net wetland area decreased 100% (0.27 acre) since 2005 as a result of inundation; open water acreage in 2005 was 0.14 acre.
W-15		X	X	3.04	0	3.04	No net wetland area increase since 2005 (also 0 acre in 2005); open water in 2005 was 0.09 acre.
W-16		X	X	1.43	0	1.43	No net wetland area increase since 2005 (also 0 acre in 2005); open water in 2005 was 0.89 acre.
<b>TOTAL</b>				<b>13.09</b>	<b>41.94</b>	<b>55.03</b>	<b>Net Wetland increase 58% since 2005; Gross Wetland increase 69% since 2005.</b>

<sup>1</sup> X: Indicates "Yes".

<sup>2</sup> Open water 0-6 feet deep, varies depending on siltation rate.

<sup>3</sup> Includes open water and emergent wetland areas.

Site 14 did qualify as a wetland in 2005; however, in 2006 the wetland vegetation (*Hordeum*) was inundated, and likely drowned.

As of July 2006, the gross aquatic habitat area within the Ridgeway Complex, which includes open water and net wetland acreage, totaled 55.03 acres, a 69% increase since 2005 (**Tables 3 and 4**). The net wetland area increased from 26.53 acres in 2005 to 41.94 acres in 2006; a 58% increase. As of the 2006 field season, approximately 110% (55.03 acres) of the 50-acre (gross) wetland creation goal had been accomplished. Given continued adequate hydrology, all open water areas should continue to transition to vegetated wetland over time.

**Table 4: 2003-2006 summary of wetland features for all Ridgeway Complex Wetland Mitigation Sites.**

YEAR	AQUATIC HABITAT (acre)		
	Open Water	Net Wetland	Gross Wetland Area
2003	17.63	8.72	26.35
2004	13.19	15.44	28.07
2005	7.69	26.53	32.63
2006	13.09	41.94	55.03

### 3.5 Wildlife

Wildlife species are listed in **Table 5**. Activities and densities associated with these observations are included on the **Monitoring Form (Appendix B)**. Northern leopard frogs, a Montana Heritage Program-listed sensitive species, were observed in all wetland sites except W-14. Wildlife throughout the Ridgeway Complex, particularly avian species, has increased in diversity since monitoring began in 2001.

**Table 5: 2001-2006 wildlife species observed on the Ridgeway Complex Wetland Mitigation Sites.**<sup>1,2</sup>

<b>AMPHIBIANS and REPTILES</b>	
northern leopard frog ( <i>Rana pipiens</i> ) Painted turtle ( <i>Chrysemys picta</i> ) plains garter snake ( <i>Thamnophis radix</i> )	
<b>BIRDS</b>	
American Avocet ( <i>Recurvirostra americana</i> ) American Bittern ( <i>Botaurus lentiginos</i> ) American coot ( <i>Fulica Americana</i> ) American Robin ( <i>Turdus migratorius</i> ) American Wigeon ( <i>Anas americana</i> ) Barn Swallow ( <i>Hirundo pyrrhonota</i> ) Black Tern ( <i>Chlidonias niger</i> ) Blue-winged Teal ( <i>Anas discors</i> ) Bobolink ( <i>Dolichonyx oryzivorus</i> ) Canada Goose ( <i>Branta canadensis</i> ) Chestnut-collared Longspur ( <i>Calcarius ornatus</i> ) Cinnamon Teal ( <i>Anas cyanoptera</i> ) Long-billed Dowitcher ( <i>Limnodromus scolopaceus</i> ) Eared Grebe ( <i>Podiceps nigricollis</i> ) Ferruginous Hawk ( <i>Buteo regalis</i> ) Gadwall ( <i>Anas strepera</i> ) Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ) Great Blue Heron ( <i>Ardea herodias</i> ) Greater Yellow Legs ( <i>Tringa melanoleuca</i> )	Horned Lark ( <i>Eremophila alpestris</i> ) Gray Partridge ( <i>Perdix perdix</i> ) Killdeer ( <i>Charadrius vociferous</i> ) Lark Bunting ( <i>Calamospiza melanocorys</i> ) Mallard ( <i>Anas platyrhynchos</i> ) Marbled Godwit ( <i>Limosa fedoa</i> ) Meadowlark ( <i>Sturnella neglecta</i> ) Mourning Dove ( <i>Zenaida macroura</i> ) Northern Shoveler ( <i>Anas clypeata</i> ) Red-winged Blackbird ( <i>Agelaius phoeniceus</i> ) Sandpiper ( <i>Calidris sp.</i> ) <sup>2</sup> Short-eared Owl ( <i>Asio flammeus</i> )  Spotted Sandpiper ( <i>Actitis macularia</i> ) Upland Sandpiper ( <i>Bartramia longicauda</i> ) Vesper Sparrow ( <i>Poocetes gramineus</i> ) Willet ( <i>Catoptrophorus semipalmatus</i> ) Wilson's Phalarope ( <i>Phalaropus tricolor</i> ) Willet ( <i>Catoptrophorus semipalmatus</i> ) Yellow-headed Blackbird ( <i>Xanthocephalus xanthocephalus</i> )
<b>MAMMALS</b>	
Mule Deer ( <i>Odocoileus hemionus</i> ) Pronghorn ( <i>Antilocarpa americana</i> ) Red Fox ( <i>Vulpes fulva</i> ) White-tailed deer ( <i>Odocoileus virginianus</i> ) White-tailed jackrabbit ( <i>Lepus townsendii</i> )	

<sup>1</sup> Bolded species were observed in 2006.

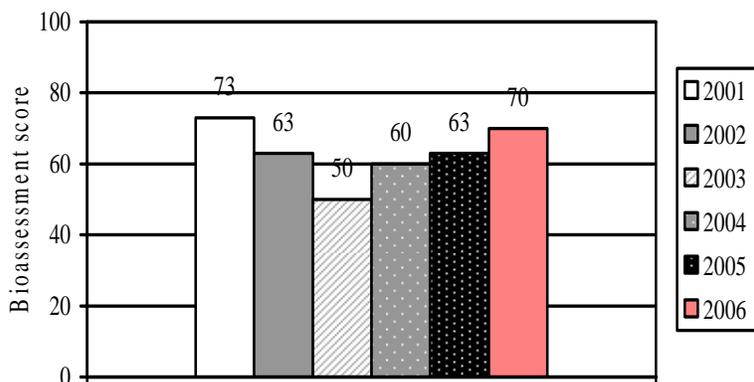
<sup>2</sup> Not identified to species.

### 3.6 Macroinvertebrates

Macroinvertebrate sampling results are provided in **Appendix F** and were summarized by Rhithron Associates in the italicized sections below and in **Chart 3** (Bollman 2006):

*Bioassessment scores at the Ridgeway site have been improving since 2003; the trend continued in 2006. Optimal biotic conditions are indicated this year. Increasing taxa richness was accompanied by increasing assemblage sensitivity. Physid snails (Physa sp.) dominated the sample collected here, implying that macrophyte surfaces contributed to habitat complexity. The water column, filamentous algae, and, to a limited degree, benthic substrates appeared to provide niches for invertebrates. Sub-optimal conditions were indicated by index performance.*

**Chart 3: Bioassessment scores from 2001-2006.**



### 3.7 Functional Assessment

A completed Functional Assessment Form for W-9 is included in **Appendix B** and summarized in **Table 6**. Several parameter scores have increased as a result of observations since 2001: increase in structural diversity, wildlife usage, and vegetation coverage. Wetland 9 functional units have increased 107% (23.8 to 49.16 FU) since 2002 and acreage has increased 64% (3.45 to 5.65 acres). Total gross aquatic habitat acreage gain (excluding 100% open water sites that do not qualify as wetlands: 14, 15, 16, and which were therefore not functionally assessed) for the Ridgeway Complex is 49.28 acres with a gain of over 414 functional units (**Table 7**).

**Table 6: Summary of 2001-2006 wetland function/value ratings and functional points at the Ridgeway W-9 Mitigation Site.**

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	2001	2002	2003	2004	2005	2006
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	High (1.0)	High (1.0)	High (1.0)	High (0.8)	High (1.0)	High (1.0)
General Wildlife Habitat	High (0.9)	Mod (0.5)	Mod (0.5)	High (.9)	High (1.0)	High (1.0)
General Fish/Aquatic Habitat	Mod (0.6)	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)
Short and Long Term Surface Water Storage	High (1.0)	High (0.9)	High (.9)	High (0.9)	High (0.9)	High (1.0)
Sediment, Nutrient, Toxicant Removal	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Mod (0.7)	High (0.9)	High (.9)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	High (0.8)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Mod (0.4)	Low (0.3)	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential	Low (0.1)	Low (0.1)	Low (0.5)	High (1.0)	High (1.0)	High (1.0)
Actual Points/ Possible Points	7.9/12	6.9/11	7.3/11	8.2/11	8.5/11	8.7/11
% of Possible Score Achieved	66%	62%	66%	75%	77%	79%
Overall Category	II	II	II	II	II	II
<b>Total Acreage of Assessed Wetlands within Easement</b>	<b>4.34<sup>1</sup></b>	<b>3.45</b>	<b>3.41</b>	<b>4.00</b>	<b>4.28</b>	<b>5.65</b>
<b>Functional Units (acreage x actual points)</b>	<b>34.33</b>	<b>23.80</b>	<b>25.88</b>	<b>32.80</b>	<b>36.40</b>	<b>49.16</b>
<b>Net Acreage Gain</b>	<b>4.34</b>	<b>3.45</b>	<b>3.41</b>	<b>4.00</b>	<b>4.28</b>	<b>5.72</b>
<b>Net Functional Unit Gain</b>	<b>34.33</b>	<b>23.81</b>	<b>25.88</b>	<b>32.80</b>	<b>36.40</b>	<b>49.16</b>

<sup>1</sup> Overestimated acreage.

**Table 7: Summary of 2006 wetland function/value ratings and functional points for all Ridgeway Complex Wetland Mitigation Sites.<sup>1</sup>**

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	Wetland 4	Wetland 11	Wetlands 1, 3, 5, 12, 13	Wetlands 2, 6, 7, 8, 9, 10
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MNHP Species Habitat	High (1.0)	High (1.0)	High (1.0)	High (1.0)
General Wildlife Habitat	Mod (0.4)	High (0.9)	High (0.9)	High (1.0)
General Fish/Aquatic Habitat	NA	NA	NA	NA
Flood Attenuation	Low (0.2)	Low (0.2)	Mod (0.5)	Mod (0.5)
Short and Long Term Surface Water Storage	Mod (0.5)	Mod (0.7)	Mod (0.7)	High (1.0)
Sediment, Nutrient, Toxicant Removal	Mod (0.7)	Mod (0.7)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Low (0.2)	Mod (0.7)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Low (0.2)	Mod (0.4)	Mod (0.7)	High (0.8)
Groundwater Discharge/Recharge	NA	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential	Low (0.1)	High (1.0)	High (1.0)	High (1.0)
Actual Points/ Possible Points	3.7/10	7.0/111	8.2/11	8.7/11
% of Possible Score Achieved	37%	64%	75%	79%
Overall Category	II	II	II	II
<b>Total Acreage of Assessed Wetlands within Easement</b>	<b>0.89</b>	<b>0.97</b>	<b>17.16</b>	<b>30.26</b>
<b>Functional Units (acreage x actual points)</b>	<b>3.29</b>	<b>6.79</b>	<b>140.71</b>	<b>263.26</b>
<b>Net Acreage Gain</b>	<b>0.89</b>	<b>0.97</b>	<b>17.16</b>	<b>30.26</b>
<b>Net Functional Unit Gain</b>	<b>3.29</b>	<b>6.79</b>	<b>140.71</b>	<b>263.26</b>
<b>Grand Total Functional Unit "Gain" for Ridgeway Complex Wetland</b>	<b>414.05</b>			

<sup>1</sup> Sites 14, 15, and 16 are not included because they do not qualify as wetland.

### 3.8 Photographs

Representative photographs of W-9 taken from photo points and transect ends are included in **Appendix C**. All photos for the remaining wetlands (W-1 to W-8 and W-10 to W-16) are included in **Appendix I**.

### 3.9 Maintenance Needs/Recommendations

No maintenance needs were observed for W-9. There is a breach in the dam at W-16. On the day of the mitigation monitoring, water was observed within the constructed pond, in the channel through the dam breach, and had flowed into the area south of the dam. The dam is not safe for vehicular traffic.

### 3.10 Current Credit Summary

As of July 2006, the gross aquatic habitat area within the Ridgeway Complex, which includes open water and net wetland acreage, totaled 55.03 acres, a 69% increase since 2005 (**Tables 3 and 4**). The net wetland area (gross aquatic habitat minus unvegetated open water) increased from 26.53 acres in 2005 to 41.94 acres in 2006; a 58% increase. As of the 2006 field season, approximately 110% (55.03 acres) of the 50-acre (gross) wetland creation goal had been accomplished. Given continued adequate hydrology, all open water areas should continue to transition to vegetated wetland over time.

Excluding the three 100% open water sites that did not qualify as wetlands in 2006: 14, 15, 16 (and which were therefore not functionally assessed), gross combined wetland/open water habitat acreage gain for the Ridgeway Complex is 49.28 acres with a gain of over 414 functional units

#### 4.0 REFERENCES

- Berglund, J. 1999. *MDT Montana Wetland Assessment Method*. May 25<sup>th</sup>. Prepared for Montana Department of Transportation and Morrison-Maierle, Inc., Helena, MT. Prepared by Western EcoTech. Helena, Montana. 18 pp.
- Bollman, W. 2006. MDT Mitigated Wetland Monitoring Project – Aquatic Invertebrate Monitoring Summary 2001-2005. Rhithron Associates Inc. Missoula, MT.
- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers, Washington, DC.
- Natural Resource Conservation Service (NRCS). 2003. *Soil Survey of Carter County, Montana*.
- Reed, P.B. 1988. *National list of plant species that occur in wetlands: North Plains (Region 4)*. Biological Report 88(26.4), May. U.S. Fish and Wildlife Service, Washington, D.C.
- Rau, L. 1999. Ridgeway Wetland Complex, Impoundment Size Letter. Bureau of Land Management, Miles City Field Office, Miles City, Montana.
- USDA Bureau of Land Management (USDA). 1990. Typical Water Retention Pit. Bureau of Land Management, Miles City Field Office, Miles City, Montana.
- USDA Bureau of Land Management (USDA). 1999. Ridgeway Wetland Complex Environmental Assessment. Bureau of Land Management, Miles City Field Office, Miles City, Montana.
- Western Regional Climate Center (WRCC). 2006. Ridgeway 1S Station:  
<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?mtridg>

## **Appendix A**

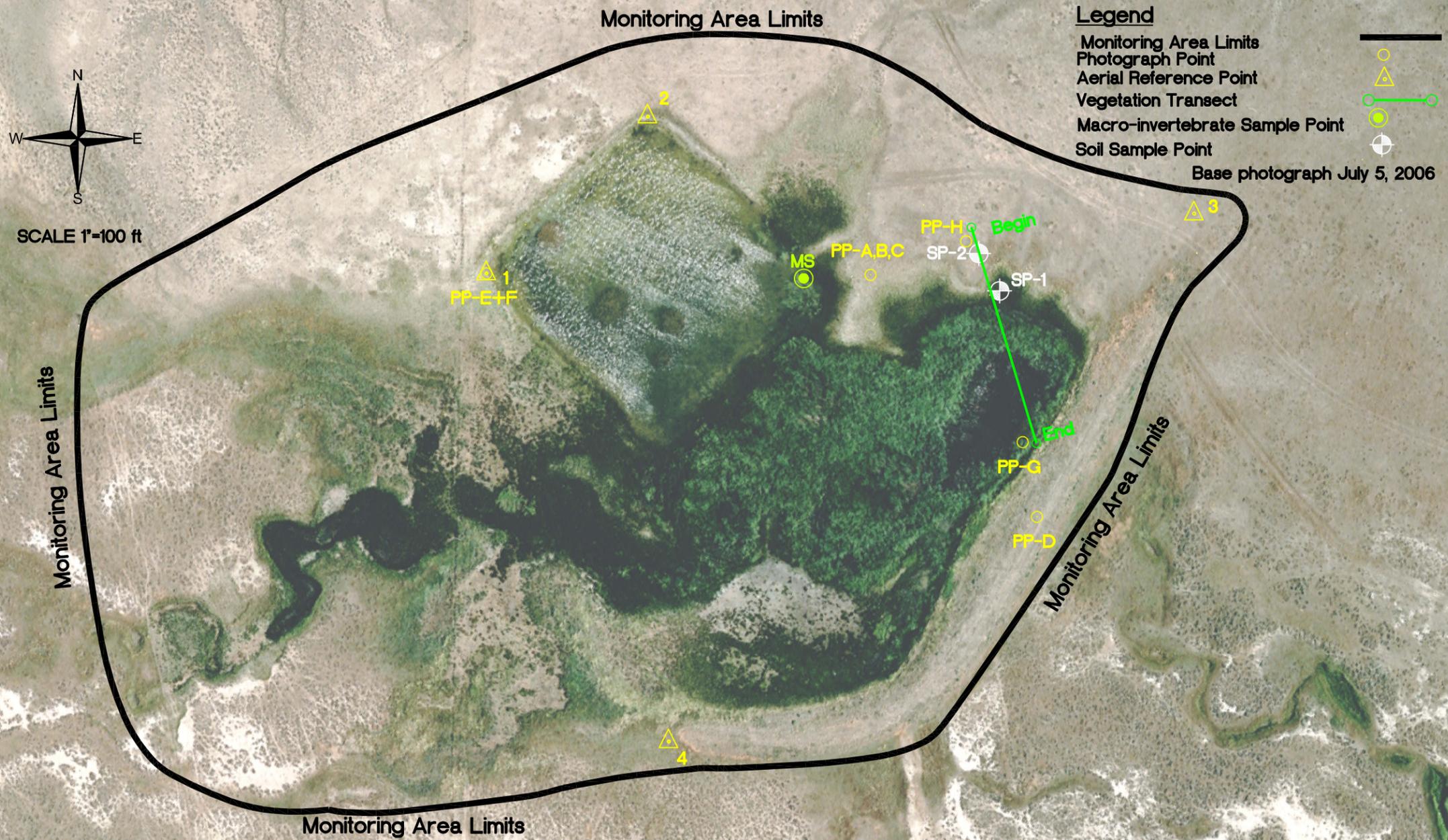
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### **WETLAND 9: 2006 FIGURES 2 & 3**

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*MDT Wetland Mitigation Monitoring  
Ridgeway Wetland Complex  
Ekalaka, Montana*

# Figure 2 Monitoring Activity Locations 2006



PROJECT NAME: MDT RIDGEWAY COMPLEX W-9 WETLAND MITIGATION  
 DRAWING TITLE: MONITORING ACTIVITY LOCATIONS 2006

PROJ. NO: B43054.00 0412W9 | DRAWN: SH/JR  
 LOCATION: RIDGEWAY COMPLEX W-9 | PROJ. MGR: J. BERGLUND  
 SCALE: 1" = 100' | CHECKED: LB | APPVD: JB  
 FILE NAME: 2006 W09BASE.dwg

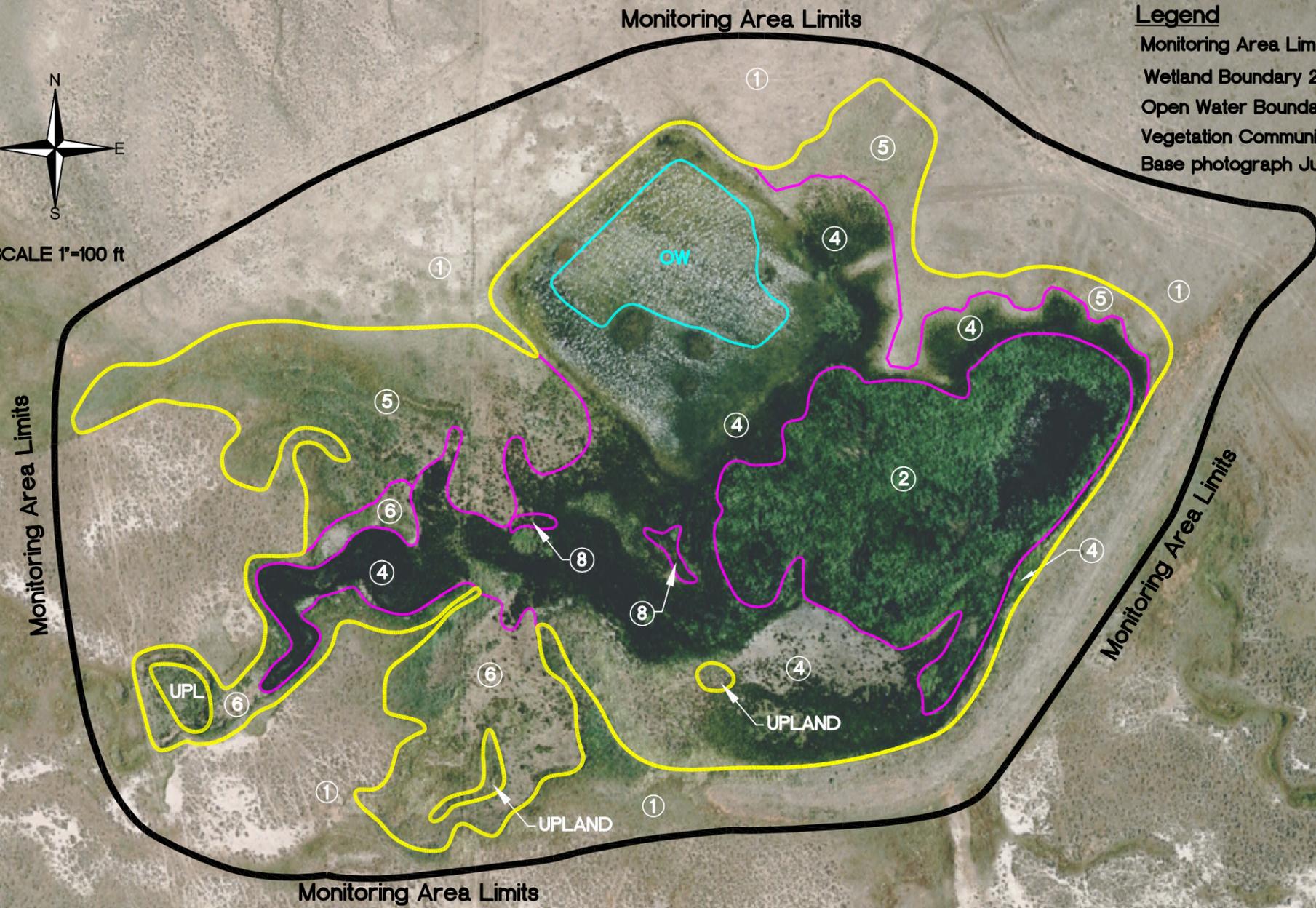
3810 Valley Commons Drive  
 Suite 4  
 Bozeman, MT 59718



# Figure 3 Mapped Site Features 2006



SCALE 1"=100 ft



## Legend

- Monitoring Area Limits
- Wetland Boundary 2004
- Open Water Boundary
- Vegetation Community Boundary
- Base photograph July 5, 2006

Gross Wetland Area = 5.65 Acres  
 Open Water Area = 0.32 Acres  
 Net Wetland Area = 5.33 Acres

## Vegetation Types:

- ① Artemisia tridentat/Artriplex argentea
- ② Typha latifolia
- ③ Eleocharis palustris/Scirpus heterochaetus
- ④ Eleocharis palustris
- ⑤ Hordeum jubatum
- ⑥ Rumex crispus/Beckmannia syzigachne
- ⑦ Rumex crispus
- ⑧ Spartina gracilis

PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-9 WETLAND MITIGATION</b>	DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b>	PROJECT NO: B43054.00 0412W9 LOCATION: RIDGEWAY COMPLEX W-9 SCALE: 1" = 100' FILE NAME: 2006 W09BASE.dwg	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB APPVD: JB
3810 Valley Commons Drive Suite 4 Bozeman, MT 59718			
FIGURE <span style="font-size: 2em; font-weight: bold;">3</span> OF		REV - Nov/13/2006	

## **Appendix B**

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### **WETLAND 9:**

**2006 WETLAND MITIGATION SITE MONITORING FORM**

**2006 BIRD SURVEY FORMS**

**2006 COE WETLAND DELINEATION FORMS**

**2006 FUNCTIONAL ASSESSMENT FORMS**

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*MDT Wetland Mitigation Monitoring*

*Ridgeway Wetland Complex*

*Ekalaka, Montana*

**LWC / MDT WETLAND MITIGATION SITE MONITORING FORM**

Project Name: **Ridgeway #9** Project Number: **B43054.00-412**  
Assessment Date: **July 19, 2006** Person(s) conducting the assessment: **LBacon/PBSJ**  
Location: **Ridgeway,MT** MDT District: **Glendive** Milepost: \_\_\_\_\_  
Legal Description: T **4S** R **57E** Section **31- 35 36**  
Weather Conditions: **clear, 80-100deg** Time of Day: **8 AM- 4 PM**  
Initial Evaluation Date: **August 23, 2001** Monitoring Year: **6** # Visits in Year: **1**  
Size of evaluation area: **5 acres** Land use surrounding wetland: **grazing/rangeland**

**HYDROLOGY**

Surface Water Source: **stormwater**  
Inundation: **Present** Average Depth: **3** Range of Depths: **0-4**  
Percent of assessment area under inundation: **21%**  
Depth at emergent vegetation-open water boundary: **1-2 feet**  
If assessment area is not inundated then are the soils saturated within 12 inches of surface: **Yes**  
Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc.):  
**erosion and inundation lines**

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

Well Number	Depth	Well Number	Depth	Well Number	Depth

- Additional Activities Checklist:
- Map emergent vegetation-open water boundary on aerial photograph.
  - Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)
  - Use GPS to survey groundwater monitoring well locations, if present.

**COMMENTS / PROBLEMS:**

\_\_\_\_\_

## VEGETATION COMMUNITIES

Community Number: **1**

Community Title (main species): **Artemesia tridentata/Atriplex**

Dominant Species	% Cover	Dominant Species	% Cover
ATRARG	3 = 11-20%		
FESIDA	3 = 11-20%		
BOUGRA	1 = 1-5%		
GRISQU	2 = 6-10%		
ARTTRI	4 = 21-50%		
AGRSMI	3 = 11-20%		

Comments / Problems: \_\_\_\_\_

Community Number: **2**

Community Title (main species): **Typha latifolia**

Dominant Species	% Cover	Dominant Species	% Cover
RUMCRI	1 = 1-5%		
TYPLAT	5 = > 50%		
ELEPAL	1 = 1-5%		
SCIHET	1 = 1-5%		
ALIPLA	1 = 1-5%		

Comments / Problems: \_\_\_\_\_

Community Number: **3**

Community Title (main species): **Alisma-plantago-aquatica**

Dominant Species	% Cover	Dominant Species	% Cover
ALIPLAN	3 = 11-20%	BECSYZ	+ = < 1%
SAGCUN	+ = < 1%		
ELEPAL	4 = 21-50%		
OPENWATER	5 = > 50%		
RUNCRI	+ = < 1%		

Comments / Problems: **This CT has changed over time, but these species were once a componet of this CT.**

Community Number: **4**

Community Title (main species): **Eleocharis palustris**

Dominant Species	% Cover	Dominant Species	% Cover
RUMCRI	3 = 11-20%	TYPLAT	+ = < 1%
ELEPAL	5 = > 50%	ELEACI	1 = 1-5%
SPAGRA	1 = 1-5%	SCIMAR	+ = < 1%
HORJUB	1 = 1-5%		
SALIXsp	+ = < 1%		
ALIPLA	1 = 1-5%		

Comments / Problems: \_\_\_\_\_

**VEGETATION COMMUNITIES (continued)**

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

Dominant Species	% Cover	Dominant Species	% Cover
HORJUB	5 = > 50%		
AGRSMI	1 = 1-5%		
RUMCRI	4 = 21-50%		

**Comments / Problems:** \_\_\_\_\_

Community Number: **6**      Community Title (main species): **Rumex crispus/Hordeum jubatum**

Dominant Species	% Cover	Dominant Species	% Cover
RUMCRI	4 = 21-50%		
HORJUB	4 = 21-50%		
ALOPRA	+ = < 1%		
SPAGRA	3 = 11-20%		
BECSYZ	3 = 11-20%		

**Comments / Problems:** CT has colonized edge of CT 4

Community Number: **7**      Community Title (main species): **Rumex crispus**

Dominant Species	% Cover	Dominant Species	% Cover
RUMCRI	5 = > 50%		

**Comments / Problems:** \_\_\_\_\_

Community Number: **8**      Community Title (main species): **Spartina gracilis**

Dominant Species	% Cover	Dominant Species	% Cover
SPAGRA	5 = > 50%		

**Comments / Problems:** \_\_\_\_\_

**Additional Activities Checklist:**

- Record and map vegetative communities on aerial photograph.





## WILDLIFE

### Birds

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

### Mammals and Herptiles

Mammal and Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
Northern leopard frog	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Red Fox	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

### Additional Activities Checklist:

Yes Macroinvertebrate Sampling (if required)

Comments / Problems: \_\_\_\_\_



## GPS SURVEYING

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

### GPS Checklist:

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

Comments / Problems: \_\_\_\_\_

## WETLAND DELINEATION

(attach COE delineation forms)

At each site conduct these checklist items:

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

Comments / Problems: **WL boundary hand-drawn after 2002.**

## FUNCTIONAL ASSESSMENT

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

Comments / Problems: \_\_\_\_\_

## MAINTENANCE

Were man-made nesting structure installed at this site? **NA**

If yes, do they need to be repaired? **NA**

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

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

If yes, are the structures working properly and in good working order? **Yes**

If no, describe the problems below.

Comments / Problems: **Non-technical structure comments, drove over berm and no breach noted (WL-16 dam still has a breach).**



## MDT WETLAND MONITORING – VEGETATION TRANSECT

### Cover Estimate

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

### Indicator Class

+ = Obligate  
- = Facultative/Wet  
0 = Facultative

### Source

P = Planted  
V = Volunteer

Percent of perimeter developing wetland vegetation (excluding dam/berm structures): 50%

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

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

Comments: \_\_\_\_\_



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

Project/Site: <u>Ridgeway Complex (#9)</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Lynn Bacon, Land &amp; Water Consulting</u>	Date: <u>7/19/06</u> County: <u>Carter</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u>  x  </u> Yes <u>    </u> No Is the site significantly disturbed (Atypical Situation)? <u>    </u> Yes <u>  x  </u> No Is the area a potential Problem Area?: <u>    </u> Yes <u>  x  </u> No (If needed, explain on reverse.)	Community ID: <u>Emergent</u> Transect ID: _____ Plot ID: <u>SP-1</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1 <u><i>Eleocharis palustis</i></u>	<u>H</u>	<u>OBL</u>		9		
2 <u><i>Rumex crispus</i></u>	<u>H</u>	<u>FACW</u>		10		
3 <u><i>Alisma plantago-aquatica</i></u>	<u>H</u>	<u>OBL</u>		11		
4 <u><i>Eleocharis acicularis</i></u>	<u>H</u>	<u>OBL</u>		12		
5 <u><i>Beckmannia syzigachne</i></u>	<u>H</u>	<u>OBL</u>		13		
6 _____				14		
7 _____				15		
8 _____				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-).      5/5 = 100%

Veg community stabilizing (ALOAQU has decreased).

**HYDROLOGY**

<u>  x  </u> Recorded Data (Describe in Remarks): <u>    </u> Stream, Lake, or Tide Gauge <u>  x  </u> Aerial Photographs <u>    </u> Other <u>    </u> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <u>  X  </u> Inundated <u>  X  </u> Saturated in Upper 12 Inches <u>    </u> Water Marks <u>    </u> Drift Lines <u>  X  </u> Sediment Deposits <u>  X  </u> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <u>    </u> Oxidized Root Channels in Upper 12 Inches <u>    </u> Water-Stained Leaves <u>    </u> Local Soil Survey Data <u>    </u> FAC-Neutral Test <u>    </u> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: <u>  NA  </u> (in.)  Depth to Free Water in Pit: <u>  NA  </u> (in.)  Depth to Saturated Soil: <u>  NA  </u> (in.)	
Remarks:  Soil pit saturated to surface.	

**SOILS**

Map Unit Name (Series and Phase):	Bickerdyke Clay	Drainage Class: <u>well</u>
Taxonomy (Subgroup):	<u>Udorthentic Chromusterts</u>	Field Observations Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	A	2.5Y 4/2	7.5 YR 4/6	Common/distinct	silt clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Low-chroma with mottles.

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<u>X</u>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland?	<u>X</u>	Yes	<input type="checkbox"/>	No
Wetland Hydrology Present?	<u>X</u>	Yes	<input type="checkbox"/>	No		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Hydric Soils Present?	<u>X</u>	Yes	<input type="checkbox"/>	No		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

Remarks:  
Wetland area continues to expand slightly to east.

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

Project/Site: <u>Ridgeway Complex (#9)</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Lynn Bacon, Land &amp; Water Consulting</u>	Date: <u>7/19/06</u> County: <u>Carter</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u>  x  </u> Yes <u>    </u> No Is the site significantly disturbed (Atypical Situation)? <u>    </u> Yes <u>  x  </u> No Is the area a potential Problem Area?: <u>    </u> Yes <u>  x  </u> No (If needed, explain on reverse.)	Community ID: <u>UPL</u> Transect ID: _____ Plot ID: <u>SP-2</u>

**VEGETATION**

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

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-).        0/3  

SP not within the wetland boundary.

**HYDROLOGY**

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

**SOILS**

Map Unit Name		Bickerdyke Clay		Drainage Class: <u>well</u>	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		<u>Udorthentic Chromusterts</u>		Confirm Mapped Type? <u>X</u> Yes <u>    </u> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	A	2.5Y 4/2			silt clay
<b>Hydric Soil Indicators:</b>					
<u>    </u> Histosol		<u>    </u> Concretions			
<u>    </u> Histic Epipedon		<u>    </u> High Organic Content in surface Layer in Sandy Soils			
<u>    </u> Sulfidic Odor		<u>    </u> Organic Streaking in Sandy Soils			
<u>    </u> Aquic Moisture Regime		<u>    </u> Listed on Local Hydric Soils List			
<u>    </u> Reducing Conditions		<u>    </u> Listed on National Hydric Soils List			
<u>    </u> Gleyed or Low-Chroma Colors		<u>    </u> Other (Explain in Remarks)			
Hydric soils absent					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	Is this Sampling Point Within a Wetland? <span style="float:right; margin-right: 50px;">Yes <u>X</u> No <u>    </u></span>
Wetland Hydrology Present?	<u>    </u>	<u>X</u>	No	
Hydric Soils Present?	<u>    </u>	<u>X</u>	No	
Remarks:				
This side of WL remains an abrupt edge around the WL boundary; west side UPL area is converting to WL, particularly adjacent to intermittent stream fingers.				



**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 (2001, 2005 observation)
- 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.): Many large and small frogs were observed this year; breeding.

**14C. General Wildlife Habitat Rating**

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

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

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

**Low** (based on any of the following)

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

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

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

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

Structural Diversity (from #13)	<input type="checkbox"/> High								<input checked="" type="checkbox"/> Moderate								<input type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input checked="" type="checkbox"/> Uneven				<input type="checkbox"/> Even			
Duration of Surface Water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
<b>Low</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	E	--	--	--	E	--	--	--
<b>Moderate</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>High</b> 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)	<b>Wildlife Habitat Features Rating from 14C(ii)</b>			
	<input checked="" type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	1 (E)	--	--	--
Moderate	--	--	--	--
Low	--	--	--	--

Comments: \_\_\_\_\_

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

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

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

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

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

ii. **Modified Habitat Quality:** Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity or is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support?

Y  N If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating:  E  H  M  L

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

Types of Fish Known or Suspected Within AA	Modified Habitat Quality from 14D(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: \_\_\_\_\_

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

Applies only to wetlands subject to flooding via in-channel or overbank flow.

If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

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

Estimated wetland area in AA subject to periodic flooding	<input type="checkbox"/> ≥ 10 acres			<input checked="" type="checkbox"/> <10, >2 acres			<input type="checkbox"/> ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains <b>no outlet or restricted outlet</b>	--	--	--	--	--	.5 (M)	--	--	--
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--	--

ii. **Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA?** (check)

Y  N Comments: \_\_\_\_\_

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

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.

If no wetlands in the AA are subject to flooding or ponding, check NA above.

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

Abbreviations: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input checked="" type="checkbox"/> >5 acre feet			<input type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	1 (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.			
	<input checked="" type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%		<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
% cover of wetland vegetation in AA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Evidence of flooding or ponding in AA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
AA contains <b>no or restricted outlet</b>	1 (H)		--		--		--	
AA contains <b>unrestricted outlet</b>	--		--		--		--	

Comments: \_\_\_\_\_

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

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

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

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	<input checked="" type="checkbox"/> Permanent / Perennial	<input type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	1 (H)	--	--
35-64 %	--	--	--
< 35 %	--	--	--

Comments:

**14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT**

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

A	<input checked="" type="checkbox"/> Vegetated component >5 acres						<input type="checkbox"/> Vegetated component 1-5 acres						<input type="checkbox"/> Vegetated component <1 acre					
B	<input type="checkbox"/> High		<input checked="" type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
P/P	--	--	--	.8H	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Comments:

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

i.  **Discharge Indicators**

- Springs are known or observed.
- Vegetation growing during dormant season/drought.
- Wetland occurs at the toe of a natural slopes.
- Seeps are present at the wetland edge.
- AA permanently flooded during drought periods.
- Wetland contains an outlet, but no inlet.
- Other

ii.  **Recharge Indicators**

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

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

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

Comments:

**14K. UNIQUENESS**

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

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
Estimated Relative Abundance from #11	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments:

**14L. RECREATION / EDUCATION POTENTIAL**

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

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

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

- Yes [Proceed to 14L (ii) and then 14L(iv).]
- No [Rate as low in 14L(iv)]

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

Ownership	Disturbance at AA from #12(i)	
	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> High
Public ownership	1 (H)	--
Private ownership	--	--

Comments: hunting opportunities, general avian and ungulate observatoins

**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	1.00	1	
D. General Fish/Aquatic Habitat	NA		--	
E. Flood Attenuation	M	0.50	1	
F. Short and Long Term Surface Water Storage	H	1.00	1	
G. Sediment/Nutrient/Toxicant Removal	H	1.00	1	
H. Sediment/Shoreline Stabilization	H	1.00	1	
I. Production Export/Food Chain Support	H	0.80	1	
J. Groundwater Discharge/Recharge	H	1.00	1	
K. Uniqueness	L	0.40	1	
L. Recreation/Education Potential	H	1.00	1	
<b>Totals:</b>		8.70	11.00	49
<b>Percent of Total Possible Points:</b>			<b>79%</b> (Actual / Possible) x 100 [rd to nearest whole #]	

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

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### **WETLAND 9: 2006 REPRESENTATIVE PHOTOGRAPHS**

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*MDT Wetland Mitigation Monitoring  
Ridgeway Wetland Complex  
Ekalaka, Montana*

## 2006 Ridgeway Complex Wetland Mitigation Site



**WL#: 9 Location: A Description:** Wetland view, east side of excavation **Compass Reading: 288°**



**WL#: 9 Location: B Description:** Wetland view, buffer in foreground **Compass Reading: 268°**



**WL#: 9 Location: C Description:** Wetland view, buffer in foreground **Compass Reading: 238°**



**WL#: 9 Location: D Description:** Wetland view, buffer in foreground **Compass Reading: 315°**



**WL#: 9 Location: E Description:** Wetland view **Compass Reading: 80°**



**WL#: 9 Location: F Description:** Wetland view **Compass Reading: 116°**

## 2006 Ridgeway Complex Wetland Mitigation Site



**WL#: 9 Location: G Description:** Wetland view from WL end of transect (same as D) **Compass Reading:** 170°



**WL#: 9 Location: H Description:** UPL veg transect end **Compass Reading:** 358°

## **Appendix D**

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### **1999 RIDGEWAY COMPLEX ENVIRONMENTAL ASSESSMENT 1990 BLM TYPICAL WATER RETENTION PIT PLANS IMPOUNDMENT SIZES**

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*MDT Wetland Mitigation Monitoring  
Ridgeway Wetland Complex  
Ekalaka, Montana*

RIDGEWAY WETLAND COMPLEX  
ENVIRONMENTAL ASSESSMENT

EA NUMBER MT-020-9-87

RIPS # 9777

GR#

PROPOSED ACTION/TITLE TYPE: Ridgeway Wetland Complex/Wildlife Project

LOCATION OF PROPOSED ACTION: T.4S., R.58E., Section 28-35

PREPARING OFFICE: Miles City Field Office, Miles City, MT

APPLICANT: L. Tauk, Richards, Steig

DATE OF PREPARATION: 2/24/99

**CONFORMANCE WITH APPLICABLE LAND USE PLAN:**

This proposed action is subject to the Powder River Resource Area R approved in 1985. The proposed action has been reviewed for conformance with this plan and its terms and conditions as required 43 CFR 1610.6.

**PURPOSE AND NEED:** A complex of small to medium-sized water impoundments will be constructed to enhance waterfowl habitat. This approach is to create many shallow wetlands in a relatively small a (5 sections) to maximize that habitats' potential to produce waterf and other wetland species.

**PROPOSED ACTION:** BLM proposes construction of a complex of wetlands (20-25 ponds) on a 5 section parcel of public lands. Objective will be to maximize the surface acres of each individual project to create shallow water waterfowl habitat. There will be about 5 different construction designs based on individual site characteristics. Existing dams will be repaired and modified, spreader dikes will be modified with pits dug in front of structure, and 2-3 different pit and fill structures will be designed to meet site characteristics.

**ALTERNATIVE CONSIDERED BUT NOT ANALYZED IN DETAIL:** No Action - the project would not be completed as planned. This is not within present BLM management consideration for the area and will not be considered further.

**AFFECTED ENVIRONMENT:**

Vegetation: Vegetation consists of Wyoming sagebrush, western wheatgrass and low sagebrush.

Soils: Soils in this area have developed in residuum and alluvium derived from the Cretaceous Pierre Shale. As a result, surface and

subsurface textures are commonly clay, silty clay loam, and clay loam. Slopes range up to 25 percent, but commonly average around 8 percent. Near drainages, slopes may be less than two percent. Upland soils are commonly shallow on summits and soil depths increase down slope to deep and very deep on the alluvial fans and flats.

The characteristics of the marine shale parent material dominates physical and chemical characteristics of the soils. Soluble salts, predominately sodium, are present in most soils of the area. Slope wash concentrates these salts in the lowest parts of the landscape, usually in or near drainages. Concentration of salts may result in a claypan area. Salts will effect vegetation population and composition.

Hydrology: Water in this area is affected by the physical and chemical characteristics of the Pierre Shale. This is commonly expressed in salt context and suspended solids. The shale is often unstable and subject to mass movement, exposing unprotected material, ultimately affecting water quality.

Recreation Opportunities: Most recreation opportunity is during hunting season and focuses on antelope and some deer hunting.

Wildlife Habitat: The most common big game species in the area is antelope. Mule deer and sage grouse use the area infrequently. Non-game species that frequent the Wyoming sagebrush, western wheatgrass, and low sagebrush habitats are well represented resulting from good rangeland conditions.

Riparian: There are no riparian values on the project area at this time.

#### **ENVIRONMENTAL IMPACTS:**

There would be no impacts to the following elements of the human environment: air quality; ACECs; cultural resources; farmlands, prime/unique; floodplains; Native American concerns; environmental justice; T&E species; wastes, hazardous/solid; water quality; wetlands/riparian; wild & scenic rivers; wilderness.

#### **DESCRIPTION OF IMPACTS FROM PROPOSED ACTION:**

Vegetation: Some native vegetation will be destroyed in the excavation process. All native vegetation impacted by flooding will be killed. Dryland habitats will transition into wetland, sub-irrigated type vegetation as the reservoirs reach equilibrium.

Cultural Resources: Survey is required.

Soils: Heavier textured soils in this area are highly susceptible to water erosion. Water flowing over the surface may form rills and gullies. When vegetation is removed, water erosion may result.

Hydrology: Until vegetation is re-established, water quality may be damaged. Suspended solids may increase as well as dissolved solids and salts of many forms. Ultimately as vegetation re-establishes, water quality will return to a natural state.

Recreational Opportunities/VRM: Hunting season recreational opportunities will be enhanced as waterfowl begin using the area. Wildlife viewing opportunity will be improved with the addition of many wetland obligate species and endemic species that will come to water.

Wildlife Species: Non-game wildlife that have very small home ranges and limited movement potential will be impacted by habitat flooding. With the creation of wetland habitats, the associated wetland wildlife species will benefit from the project. Avian and terrestrial predators will benefit from enhanced prey base.

Riparian Values: Riparian/wetland values will be greatly enhanced. Shorelines will rapidly develop into stands of sedge, rush, cattail/bubrush and wet-meadow grasses and forbs.

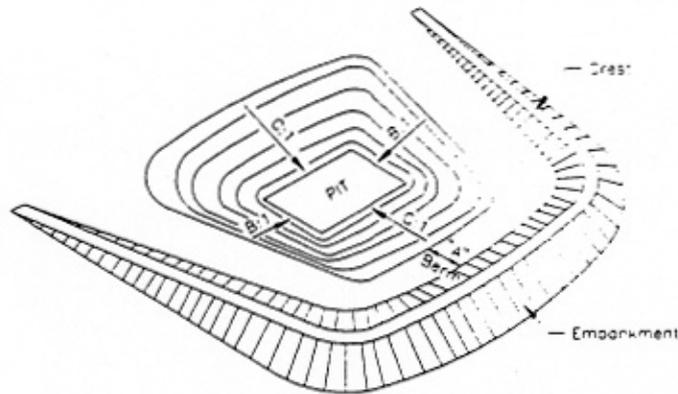
Land Uses: There are several Rights-of-Way in Section 34, some which are buried. If any digging takes place in this section, must coordinate with rights-of-way holders.

#### **STIPULATIONS:**

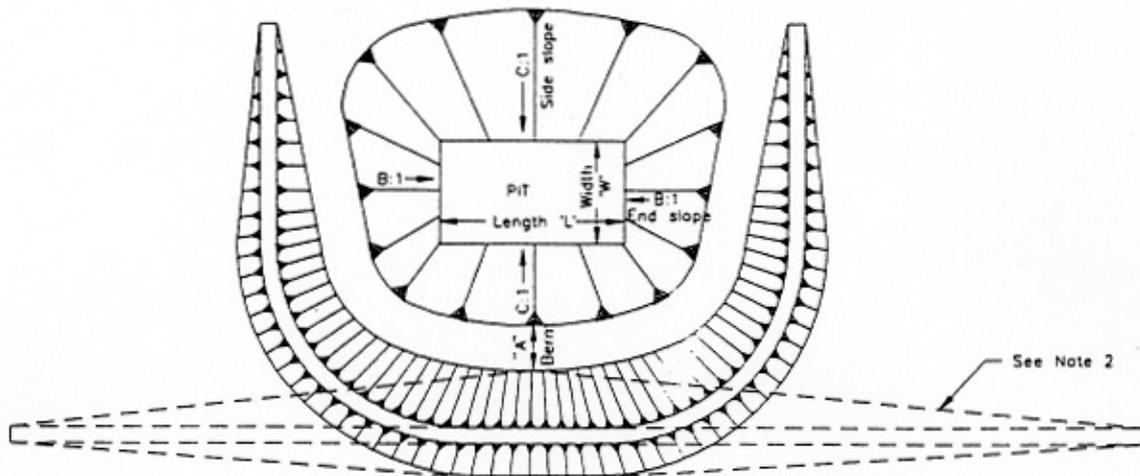
The contractor shall immediately bring to the attention of the BLM Field Manager any and all antiquities or other items of cultural or scientific interest, including but not limited to historic or prehistoric ruins, fossils, artifacts or burials discovered as a result of his operations, and shall leave such discoveries intact until told to proceed by the BLM Field Manager.

#### **LIST OF PREPARERS:**

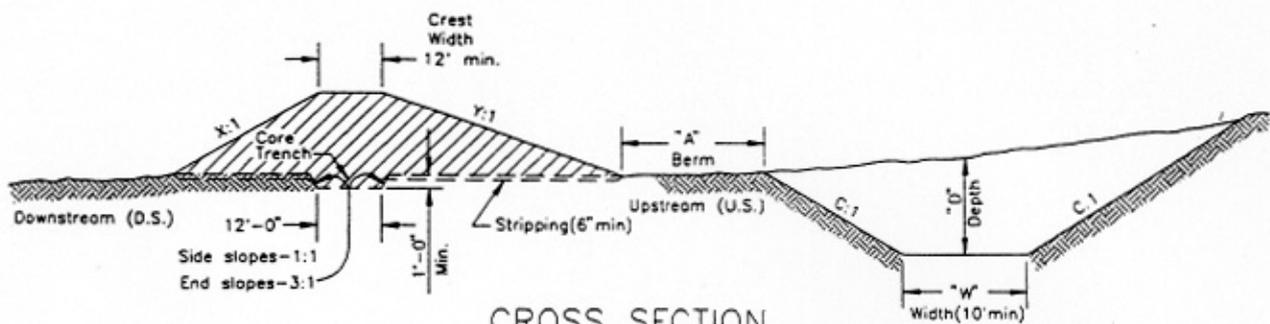
Miles City Field Office Personnel: Jeff Gustad, Rangeland Mgmt Spec; Ted Birnie, Archaeologist; Pam Wall, Realty Specialist; Robert Mitchell, Soil Scientist; Dan Bricco, Outdoor Recreation Planner; Larry Rau, Wildlife Biologist.



PERSPECTIVE VIEW



PLAN



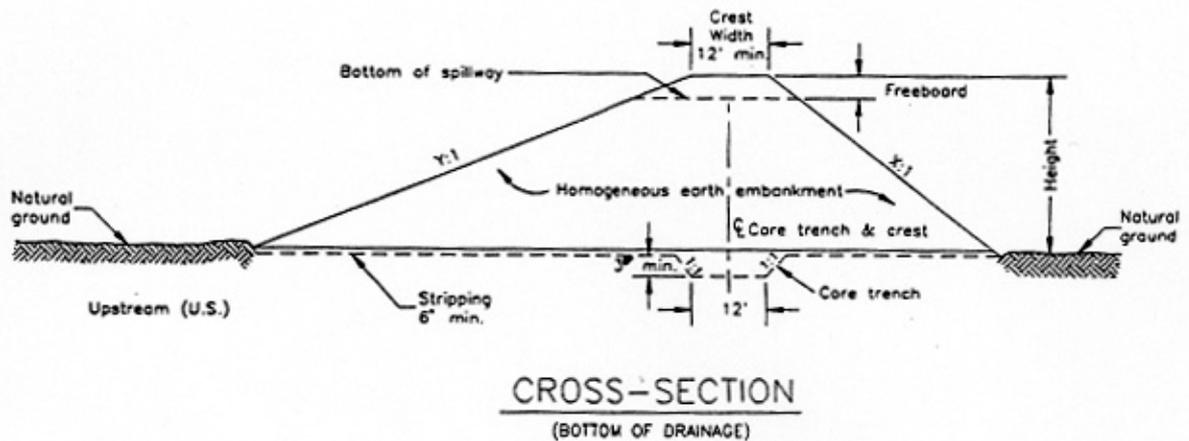
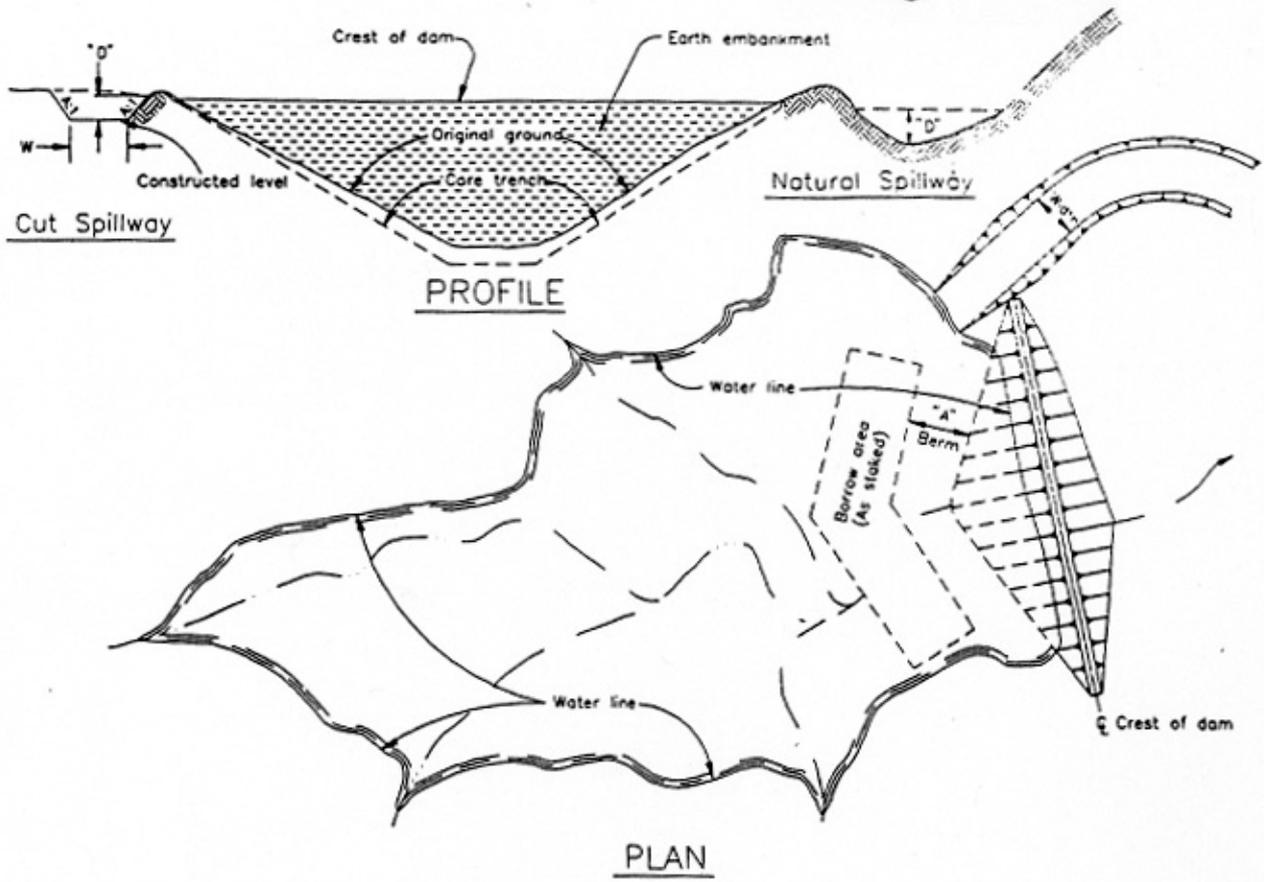
CROSS SECTION

NOTES:

1. Pit and embankment slopes and dimensions shall be as shown on the Work Data Sheet or as staked.
2. Embankment may be "U", "L", "C", or straight line shape. Construct as indicated in specifications or as staked.

ALWAYS THINK SAFETY

UNITED STATES DEPARTMENT OF THE INTERIOR	
BUREAU OF LAND MANAGEMENT	
DIVISION OF TECHNICAL SERVICES	SERVICE CENTER
TYPICAL WATER RETENTION PIT	
DESIGNED	by others
REVIEWED	<i>[Signature]</i>
APPROVED	<i>[Signature]</i>
DRAWN	SCALE NONE
DATE AUGUST 5, 1990	SHEET OF
DRAWING NO. 02291-1	



CROSS-SECTION  
(BOTTOM OF DRAINAGE)

**NOTES:**

1. Embankment slopes and dimensions shall be as shown in specifications.
2. Berm with "A" minimum of 25' or as shown on the Work Data Sheet or as staked.
3. Freeboard as shown on the Work Data Sheet.

ALWAYS THINK SAFETY

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT DIVISION OF TECHNICAL SERVICES SERVICE CENTER	
<b>TYPICAL MINOR RETENTION DAM</b>	
DESIGNED	by others
REVIEWED	<i>[Signature]</i>
APPROVED	<i>[Signature]</i>
DRAWN	SCALE NONE
DATE	SHEET OF
DRAWING NO. 02291-2	

Jerry 6/28

Enclosed are some examples of typical pit/fill projects that will be applied on the Ridgway waterbowl project.

At this time, we have 15-17 separate projects that will incorporate one or a combination of these examples.

The basic idea, as explained in previous correspondence, is to create as much shallow water/wetlands using the topography to the best of our advantage. The fill material will come from the pit which will be designed for large surface, i.e. 200 x 200', and shallow depth, 6-8'.

The large dam will have more extensive & specific design. However, our engineering staff is waiting until we secure the water right before proceeding. We are expecting this documentation this summer.

Also included is the Environmental Analysis for this project.

Thanks for your help. Hopefully this info will help move things along.

Stay in touch -  
Jerry Lan

RECEIVED

JUN 29 1999

ENVIRONMENTAL



## **Appendix E**

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### **BIRD SURVEY PROTOCOL GPS PROTOCOL**

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*MDT Wetland Mitigation Monitoring  
Ridgeway Wetland Complex  
Ekalaka, Montana*

## **BIRD SURVEY PROTOCOL**

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

### **Species Use within the Mitigation Wetland: Survey Method**

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

#### ***Sites that can be circumambulated or walked throughout.***

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

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

#### ***Sites that cannot be circumambulated.***

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

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

### **Species Use within the Mitigation Wetland: Data Recording**

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

#### ***1. Bird Species List***

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

#### ***2. Bird Density***

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

#### ***3. Bird Behavior***

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

#### ***4. Bird Species Habitat Use***

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

## **GPS Mapping and Aerial Photo Referencing Procedure**

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

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

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

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

## **Appendix F**

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### **WETLAND 9: 2006 MACROINVERTEBRATE SAMPLING PROTOCOL & DATA**

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*MDT Wetland Mitigation Monitoring  
Ridgeway Wetland Complex  
Ekalaka, Montana*

# AQUATIC INVERTEBRATE SAMPLING PROTOCOL

## Equipment List

- D-frame sampling net with 1 mm mesh. Wildco is a good source of these.
- Spare net.
- 1-liter plastic sample jars, wide-mouth. VWR has these: catalog #36319-707.
- 95% ethanol: Northwest Scientific in Billings carries this.

All these other things are generally available at hardware or sporting goods stores. Make the labels on an ink jet printer preferably.

- hip waders.
- pre-printed sample labels (printed on Rite-in-the-Rain or other coated paper, two labels per sample).
- pencil.
- plastic pail (3 or 5 gallon).
- large tea strainer or framed screen.
- towel.
- tape for affixing label to jar.
- cooler with ice for sample storage.

## Site Selection

Select the sampling site with these considerations in mind:

- Select a site accessible with hip waders. If substrates are too soft, lay a wide board down to walk on.
- Determine a location that is representative of the overall condition of the wetland.

## Sampling

Wetland invertebrates inhabit the substrate, the water column, the stems and leaves of aquatic vegetation, and the water surface. Your goal is to sweep the collecting net through each of these habitat types, and then to combine the resulting samples into the 1-liter sample jar.

Dip out about a gallon of water into the pail. Pour about a cup of ethanol into the sample jar. Fill out the top half of the sample labels, using pencil, since ink will dissolve in the ethanol.

Ideally, you can sample a swath of water column from near-shore outward to a depth of approximately 3 feet with a long sweep of the net, keeping the net at about half the depth of the water throughout the sweep. Sweep the water surface as well. Pull the net through a vegetated area, beneath the water surface, for at least a meter of distance.

Sample the substrate by pulling the net along the bottom, bumping it against the substrate several times as you pull.

This step is optional, but it gives you a chance to see that you've collected some invertebrates. Rinse the net out into the bucket, and look for insects, crustaceans, etc. If necessary, repeat the sampling process in a nearby location, and add the net contents to the bucket. Remember to sample all four environments.

Sieve the contents of the bucket through the straining device and pour or carefully scrape the contents of the strainer into the sample jar.

If you skip the bucket-and-sieve steps, simply lift handfuls of material out of the sampling net into the jars. In either case, please include some muck or mud and some vegetation in the jar. Often, you will have collected a large amount of vegetable material. If this is the case, lift out handfuls of material from the sieve into the jar, until the jar is about half full. Please limit material you include in the sample, so that there is only a single jar for each sample.

Top off the sample jar with enough ethanol to cover all the material in the jar. Leave as little headroom as possible.

It is not necessary to sample habitats in any specified order. Keep in mind that disturbing the habitats prior to sampling will chase off the animals you are trying to capture.

Complete the sample labels. Place one label inside the sample jar and tape the other label securely to the outside of the jar. Dry the jar before attaching the outer label if necessary. In some situations, it may be necessary to collect more than one sample at a site. If you take multiple samples from the same site, clearly indicate this by using individual sample numbers, along with the total number of samples collected at the site (e.g. Sample #3 of 5 total samples).

Photograph the sampled site.

### **Sample Handling/Shipping**

- In the field, keep collected samples cool by storing them in a cooler. Only a small amount of ice is necessary.
- Inventory all samples, preparing a list of all sites and enumerating all samples, before shipping or delivering to the laboratory.
- Deliver samples to Rhithron.

# **MDT Mitigated Wetland Monitoring Project: Aquatic Invertebrate Monitoring Summary 2001 – 2006**

Prepared for PBS&J, Inc.

Prepared by W.Bollman, Rhithron Associates, Inc.

## **INTRODUCTION**

Among other monitoring activities, aquatic invertebrate assemblages were collected at a number of mitigated wetlands throughout Montana. This report summarizes data generated from six years of collection. Over all years of sampling, a total of 182 invertebrate samples were collected. Table 2 summarizes sites and sampling years.

## **METHODS**

### **Sample processing**

Aquatic invertebrate samples were collected at mitigated wetland sites in the summer months of 2001, 2002, 2003, 2004, 2005 and 2006 by personnel of PBS&J, Inc. Sampling procedures utilized were based on the protocols developed by the Montana Department of Environmental Quality (MT DEQ). Sampling consisted of D-frame net sweeps through emergent vegetation (when present), the water column, and over the water surface, and included disturbing and scraping substrates at each sampled site. These sample components were composited and preserved in ethanol at each wetland site. Samples were delivered to Rhithron Associates, Inc. for processing, taxonomic determinations, and data analysis.

At Rhithron's laboratory, Caton subsamplers and stereomicroscopes with 10X magnification were used to randomly select a minimum of 100 organisms from each sample. In some instances, the entire sample contained fewer than 100 organisms; in these cases, all organisms from the sample were taken. Animals were identified to lowest practical taxonomic levels using relevant published resources. Quality control (QC) procedures were applied to sample sorting, taxonomic determinations and enumeration, and data entry. QC statistics are presented in Table 3. The identified samples have been archived at Rhithron's laboratory.

### **Assessment**

The method employed to assess these wetlands is based on an index incorporating a battery of 12 bioassessment metrics or attributes (Table 1) tested and recommended by Stribling et al. (1995) in a report to the Montana Department of Health and Environmental Science. In that study, it was determined that some of the metrics were of limited use in some geographic regions, and for some wetland types. Despite that finding, all 12 metrics are used in this evaluation of mitigated wetlands, since detailed geographic information and wetland classifications were unavailable.

Scoring criteria for metrics were developed by generally following the tactic used by Stribling et al. Boxplots were generated using a statistical software package (Statistica™), and distributions, median values, ranges, and quartiles for each metric were examined. All sites in all years of sampling were used. Camp Creek, which was sampled in 2002, 2003, 2004, 2005 and 2006, and Kleinschmidt Creek, sampled in 2003, 2004, 2005 and 2006, were assessed using the tested metric battery developed for montane streams of Western Montana (Bollman 1998). Invertebrate assemblages at these sites differed from those of the other sites, and suggested montane or foothill stream conditions rather than wetland conditions. For the wetland sites, "optimal" scores were generally those that fell above the 75<sup>th</sup> percentile (for those metrics that decrease in value in response to stress) or below the 25<sup>th</sup> percentile (for metrics that respond to stress by an increase in value) of all scores. Additional scoring ranges were established by bisecting the range below the 75<sup>th</sup> percentile for decreasing scores (or above the 25<sup>th</sup> percentile for increasing scores) into "sub-optimal" and "poor" assessment categories. A score of 5, 3, or 1 was assigned to optimal, sub-optimal, and poor metric performance, respectively. In this way, metric values were translated into normalized metric scores, and scores for all metrics were summed to produce a total bioassessment score. Total bioassessment scores were classified according to a similar process, using the ranges and distributions of total scores for all sites studied in all years.

The purpose of constructing an index from biological attributes or metrics is to provide a means of integrating information to facilitate the determination of whether management action is needed. The nature of the action needed is not determined solely by the index score, however, but by consideration of an

analysis of the component metrics, the taxonomic composition of the assemblages, and other issues. The diagnostic functions of the metrics and taxonomic data need more study since our understanding of the interrelationships of natural environmental factors and anthropogenic disturbances is tentative. Thus, the further interpretive remarks accompanying the raw taxonomic and metric data in this summary are offered cautiously. Year-to-year comparisons depend on an assumption that specific sites were revisited in each year, and that equivalent sampling methods were utilized at each site revisit.

### **Bioassessment metrics**

An index based on the performance of 12 metrics was constructed, as described above. Table 2 lists those metrics, describes their calculation and the expected response of each to increased degradation or impairment of the wetland.

In addition to the summed scores of each metric and the associated impairment classification described above, each individual metric informs the bioassessment to some degree. The four richness metrics (Total taxa, POET, Chironomidae taxa, and Crustacea taxa + Mollusca taxa) can be interpreted to express habitat complexity as well as water quality. Complex, diverse habitats consist of variable substrates, emergent vegetation, variable water depths and other factors, and are potential features of long-established stable wetlands with minimal human disturbance. In the study conducted by Stribling et al. (1995), all four richness metrics were found to be significantly associated with water quality parameters including conductance, salinity, and total dissolved solids.

Four composition metrics (%Chironomidae, %Orthoclaadiinae of Chironomidae, %Crustacea + %Mollusca, and %Amphipoda) measure the relative contributions of certain taxonomic groups that may have significant responses to habitat and/or water quality impacts. For example, amphipods have been demonstrated to increase in abundance in alkaline conditions. Short-lived, relatively mobile taxa such as chironomids dominate ephemeral environments; many are hemoglobin-bearers capable of tolerating de-oxygenated conditions.

Two tolerance metrics (the Hilsenhoff Biotic Index and %Dominant taxon) were included in the bioassessment battery. The HBI indicates the overall invertebrate assemblage tolerance to nutrient enrichment, warm water, and/or low dissolved oxygen conditions. The percent abundance of the dominant taxon has been demonstrated to be strongly associated with pH, conductance, salinity, total organic carbon, and total dissolved solids.

Two trophic measures (%Collector-gatherers and %Filterers) may be helpful in expressing functional integrity of the invertebrate assemblage, which can be impacted by poor water quality or habitat degradation. High proportions of filtering organisms suggest nutrient and/or organic enrichment, while abundant collectors suggest more positive functional conditions and well-developed wetland morphology. These organisms graze periphyton growing on stable surfaces such as macrophytes.

Metric scoring criteria were re-examined each year as new data was added. For 2005, all 151 records were utilized. Ranges of individual metrics, as well as median metric values remained remarkably consistent over all 5 years of analysis. Since metric value distributions changed insignificantly with the addition of the 2006 data, no changes were made to scoring criteria this year. Summary metric values and scores for the 2006 samples are given in Tables 3a-3d.

### **Quality control**

Quality control procedures for initial sample processing and subsampling involved checking sorting efficiency. These checks were conducted on 100% of the samples by independent technicians who microscopically re-examined 20% of sorted substrate from each sample. All organisms that were missed were counted and this number was added to the total number obtained in the original sort. Sorting efficiency was evaluated by applying the following calculation:

$$SE = \frac{n_1}{n_2} \times 100$$

Where: SE is the sorting efficiency, expressed as a percentage,  $n_1$  is the total number of specimens in the first sort, and  $n_2$  is the total number of specimens in the first and second sorts combined.

Quality control procedures for taxonomic determinations involved checking accuracy, precision and enumeration. Four samples were randomly selected and all organisms re-identified by independent taxonomists. A Bray-Curtis similarity statistic (Bray and Curtis 1957) was generated to evaluate identifications.

**Table 1.** Montana Department of Transportation Mitigated Wetlands Monitoring Project sites, 2001 – 2006.

Site identifier	2001	2002	2003	2004	2005	2006
Beaverhead 1	+	+	+	+	+	+
Beaverhead 2	+	+				
Beaverhead 3	+	+		+	+	+
Beaverhead 4	+	+	+			
Beaverhead 5	+	+	+	+	+	+
Beaverhead 6	+	+	+	+	+	+
Big Sandy 1	+					
Big Sandy 2	+					
Big Sandy 3	+					
Big Sandy 4	+					
Johnson-Valier	+					
VIDA	+					
Cow Coulee	+	+	+			
Fourchette – Puffin	+	+	+	+		
Fourchette – Flashlight	+	+	+	+		
Fourchette – Penguin	+	+	+	+		
Fourchette – Albatross	+	+	+	+		
Big Spring	+	+	+	+	+	
Vince Ames	+					
Ryegate	+					
Lavinia	+					
Stillwater	+	+	+	+	+	
Roundup	+	+	+	+	+	+
Wigeon	+	+	+	+	+	+
Ridgeway	+	+	+	+	+	+
Musgrave – Rest. 1	+	+	+	+	+	+
Musgrave – Rest. 2	+	+	+	+	+	+
Musgrave – Enh. 1	+	+	+	+	+	+
Musgrave – Enh. 2	+					+
Hoskins Landing		+	+	+	+	
Hoskins Landing						
Peterson - 1		+	+	+	+	+
Peterson – 2		+		+	+	+
Peterson – 4		+	+	+	+	+
Peterson – 5		+	+	+	+	+
Jack Johnson - main		+	+			
Jack Johnson - SW		+	+			
Creston		+	+	+	+	
Lawrence Park		+				
Perry Ranch		+			+	
SF Smith River		+	+	+	+	+
Camp Creek		+	+	+	+	+
Camp Creek						+
Kleinschmidt		+	+	+	+	+
Kleinschmidt – stream			+	+	+	+
Ringling - Galt			+			
Circle				+		
Cloud Ranch Pond				+	+	
Cloud Ranch Stream				+		
American Colloid				+	+	+
Jack Creek				+	+	
Jack Creek						
Norem				+	+	+
Rock Creek Ranch					+	+
Wagner Marsh					+	+
Alkali Lake 1						+
Alkali Lake 2						+

**Table 2.** Aquatic invertebrate metrics employed in the MTDT mitigated wetland monitoring study, 2001-2005.

<b>Metric</b>	<b>Metric calculation</b>	<b>Expected response to degradation or impairment</b>
Total taxa	Count of unique taxa identified to lowest recommended taxonomic level	Decrease
POET	Count of unique Plecoptera, Trichoptera, Ephemeroptera, and Odonata taxa identified to lowest recommended taxonomic level	Decrease
Chironomidae taxa	Count of unique midge taxa identified to lowest recommended taxonomic level	Decrease
Crustacea taxa + Mollusca taxa	Count of unique Crustacea taxa and Mollusca taxa identified to lowest recommended taxonomic level	Decrease
% Chironomidae	Percent abundance of midges in the subsample	Increase
Orthoclaadiinae/Chironomidae	Number of individual midges in the sub-family Orthoclaadiinae / total number of midges in the subsample.	Decrease
% Amphipoda	Percent abundance of amphipods in the subsample	Increase
%Crustacea + %Mollusca	Percent abundance of crustaceans in the subsample plus percent abundance of molluscs in the subsample	Increase
HBI	Relative abundance of each taxon multiplied by that taxon's modified Hilsenhoff Biotic Index (tolerance) value. These numbers are summed over all taxa in the subsample.	Increase
%Dominant taxon	Percent abundance of the most abundant taxon in the subsample	Increase
%Collector-Gatherers	Percent abundance of organisms in the collector-gatherer functional group	Decrease
%Filterers	Percent abundance of organisms in the filterer functional group	Increase

## RESULTS

(Note: Individual site discussions were removed from this report by PBS&J and are included in the macroinvertebrate sections of individual monitoring reports. Summary tables (4a – 4d) are provided on the following pages.)

### Quality Assurance

Table 3 gives the results of quality assurance procedures for sample sorting and taxonomic determinations and enumeration.

**Table 3.** Results of quality control procedures for subsampling and taxonomy.

Sample ID	Site name	SE	Bray-Curtis similarity
MDT06PBSJ001	MUSGRAVE LAKE ES-1	91.67%	
MDT06PBSJ002	MUSGRAVE LAKE ES-2	94.44%	
MDT06PBSJ003	MUSGRAVE LAKE RS-1	87.30%	
MDT06PBSJ004	MUSGRAVE LAKE RS-2	100.00%	
MDT06PBSJ005	ROCK CREEK RANCH	96.49%	95.25%
MDT06PBSJ006	Alkali Lake Sample 1	100.00%	
MDT06PBSJ007	Alkali Lake Sample 2	100.00%	
MDT06PBSJ008	Peterson Ranch Pond # 4	100.00%	
MDT06PBSJ009	Peterson Ranch Pond # 1	97.35%	
MDT06PBSJ010	Peterson Ranch Pond # 5	91.67%	
MDT06PBSJ011	South Fork Smith River	100.00%	
MDT06PBSJ012	Beaverhead 1	100.00%	
MDT06PBSJ013	Beaverhead 3	95.65%	
MDT06PBSJ014	Beaverhead 5	100.00%	
MDT06PBSJ015	Beaverhead 6	94.12%	98.38%
MDT06PBSJ016	Peterson Ranch Pond # 2	91.67%	99.66%
MDT06PBSJ017	American Colloid	100.00%	
MDT06PBSJ018	Norem	100.00%	
MDT06PBSJ019	Cloud Ranch	85.56%	98.89%
MDT06PBSJ020	Jack Creek Pond	100.00%	
MDT06PBSJ021	Jack Creek Stream	100.00%	
MDT06PBSJ022	Camp Creek 1	99.10%	
MDT06PBSJ023	Camp Creek 2	100.00%	
MDT06PBSJ024	Kleinschmidt Pond	100.00%	
MDT06PBSJ025	Kleinschmidt Stream	96.49%	
MDT06PBSJ026	Hoskins Landing 1	97.35%	
MDT06PBSJ027	Hoskins Landing 2	96.49%	
MDT06PBSJ028	Wagner Marsh	100.00%	
MDT06PBSJ029	Wigeon Reservoir	100.00%	
MDT06PBSJ030	Ridgeway	98.21%	
MDT06PBSJ031	Roundup	100.00%	

**Table 4a.** Metric values and scores for Montana Department of Transportation mitigated wetland sites. 2006.

	BEAVERHEAD #1	BEAVERHEAD #3	BEAVERHEAD #5	BEAVERHEAD #6	ROUNDUP	WIDGEON	RIDGEWAY	MUSGRAVE RS-1
Total taxa	12	11	4	15	11	11	21	23
POET	1	0	1	3	2	1	3	4
Chironomidae taxa	5	3	1	7	4	3	10	7
Crustacea + Mollusca	1	4	2	3	2	2	5	7
% Chironomidae	52.38%	25.22%	0.69%	63.06%	18.87%	6.42%	37.25%	9.62%
Orthoclaadiinae/Chir	0.181818	0.965517	0	0.142857	0.2	0.285714	0.289474	0.7
% Amphipoda	0.00%	0.00%	0.00%	0.90%	0.00%	6.42%	11.76%	1.92%
% Crustacea + % Mollusca	9.52%	69.57%	98.62%	3.60%	73.58%	79.82%	45.10%	51.92%
HBI	7.857143	7.773913	7.97931	7.243243	8.09434	8.100917	7.127451	7.403846
% Dominant taxon	33.33%	39.13%	97.93%	27.93%	72.64%	73.39%	28.43%	23.08%
% Collector-Gatherers	61.90%	68.70%	100.00%	84.68%	87.74%	6.42%	49.02%	47.12%
% Filterers	0.00%	2.61%	0.00%	1.80%	0.00%	0.00%	0.00%	4.81%
Total taxa	1	1	1	3	1	1	5	5
POET	1	1	1	3	1	1	3	5
Chironomidae taxa	3	3	1	5	3	3	5	5
Crustacea + Mollusca	1	3	1	1	1	1	3	5
% Chironomidae	1	3	5	1	3	5	3	5
Orthoclaadiinae/Chir	1	5	1	1	3	3	3	5
% Amphipoda	5	5	5	5	5	3	3	5
% Crustacea + % Mollusca	5	1	1	5	1	1	3	3
HBI	1	1	1	3	1	1	3	3
% Dominant taxon	5	3	1	5	1	1	5	5
% Collector-Gatherers	3	3	5	5	5	1	3	3
% Filterers	3	3	3	3	3	3	3	3
<b>Total score</b>	30	32	26	40	28	24	42	52
<b>Percent of maximum score</b>	0.5	0.533333	0.433333	0.666667	0.466667	0.4	0.7	0.866667
<b>Impairment classification</b>	poor	poor	poor	sub-optimal	poor	poor	optimal	optimal

**Table 4b.** Metric values and scores for Montana Department of Transportation mitigated wetland sites. 2006.

	MUSGRAVE RS- 2	MUSGRAVE ES- 1	MUSGRAVE ES- 2	HOSKINS LANDING 1	HOSKINS LANDING 2	PETERSON RANCH 1	PETERSON RANCH 2	PETERSON RANCH 4	PETERSON RANCH 5
<b>Total taxa</b>	10	21	10	22	29	19	17	28	26
POET	1	2	1	5	4	2	2	3	4
Chironomidae taxa	2	7	4	6	6	7	4	13	9
Crustacea + Mollusca	3	6	0	5	9	5	6	5	6
% Chironomidae	3.96%	10.89%	10.00%	18.18%	11.71%	64.08%	7.48%	27.52%	14.29%
Orthoclaadiinae/Chir	0	0.181818	0.125	0.055556	0.307692	0.757576	0.75	0.6	0.75
% Amphipoda	0.00%	2.97%	0.00%	5.05%	1.80%	1.94%	22.43%	2.75%	15.18%
% Crustacea + % Mollusca	8.91%	75.25%	0.00%	20.20%	23.42%	8.74%	42.06%	19.27%	40.18%
HBI	6.326733	6.940594	6	7.111111	7.585586	6.631068	6.719626	7.293578	7.321429
% Dominant taxon	70.30%	38.61%	83.75%	25.25%	42.34%	47.57%	28.04%	20.18%	16.07%
% Collector-Gatherers	15.84%	8.91%	3.75%	64.65%	62.16%	72.82%	31.78%	34.86%	50.89%
% Filterers	0.00%	0.00%	0.00%	6.06%	5.41%	3.88%	3.74%	8.26%	0.89%
<b>Total taxa</b>	1	5	1	5	5	3	3	5	5
POET	1	1	1	5	5	1	1	3	5
Chironomidae taxa	1	5	3	3	3	5	3	5	5
Crustacea + Mollusca	1	5	1	3	5	3	5	3	5
% Chironomidae	5	5	5	3	5	1	5	3	5
Orthoclaadiinae/Chir	1	1	1	1	3	5	5	5	5
% Amphipoda	5	5	5	3	5	5	3	5	3
% Crustacea + % Mollusca	5	1	5	5	5	5	3	5	3
HBI	5	3	5	3	3	5	5	3	3
% Dominant taxon	1	3	1	5	3	3	5	5	5
% Collector-Gatherers	1	1	1	3	3	3	1	1	3
% Filterers	3	3	3	1	3	3	3	1	3
<b>Total score</b>	30	38	32	40	48	42	42	44	50
<b>Percent of maximum score</b>	0.5	0.633333	0.533333	0.666667	0.8	0.7	0.7	0.733333	0.833333
<b>Impairment classification</b>	<b>poor</b>	<b>sub-optimal</b>	<b>poor</b>	<b>sub-optimal</b>	<b>optimal</b>	<b>optimal</b>	<b>optimal</b>	<b>optimal</b>	<b>optimal</b>

**Table 4c.** Metric values and scores for Montana Department of Transportation mitigated wetland sites. 2006

	SOUTH FORK SMITH RIVER	CAMP CREEK 1*	CAMP CREEK 2*	KLEINSCH MIDT POND	KLEINSCH MIDT STREAM*	CLOUD RANCH	COLLOID	JACK CREEK POND	JACK CREEK STREAM
Total taxa	14	31	29	20	22	13	7	7	5
POET	4	8	8	5	1	1	2	0	0
Chironomidae taxa	3	10	8	6	8	6	4	4	0
Crustacea + Mollusca	4	1	3	2	5	3	0	2	2
% Chironomidae	18.02%	45.87%	16.07%	8.04%	77.68%	23.81%	84.21%	75.00%	0.00%
Orthoclaadiinae/Chir	0.05	0.26	0.277778	0.222222	0.448276	0.65	0.25	0.555556	0
% Amphipoda	18.02%	0.00%	0.00%	25.00%	0.00%	4.76%	0.00%	0.00%	5.00%
% Crustacea + % Mollusca	58.56%	0.92%	3.57%	25.89%	5.36%	11.90%	0.00%	16.67%	7.50%
HBI	7.540541	4.504587	4.294643	7.241071	5.928571	7.535714	6.315789	8.833333	7.325
% Dominant taxon	25.23%	24.77%	37.50%	25.00%	33.93%	36.90%	52.63%	33.33%	60.00%
% Collector-Gatherers	41.44%	48.62%	31.25%	62.50%	46.43%	64.29%	21.05%	58.33%	67.50%
% Filterers	15.32%	6.42%	7.14%	3.57%	38.39%	2.38%	0.00%	0.00%	0.00%
Total taxa	1	5	5	3	5	1	1	1	1
POET	5	5	5	5	1	1	1	1	1
Chironomidae taxa	3	5	5	3	5	3	3	3	1
Crustacea + Mollusca	3	1	1	1	3	1	1	1	1
% Chironomidae	3	1	5	5	1	3	1	1	5
Orthoclaadiinae/Chir	1	3	3	3	3	5	3	5	1
% Amphipoda	3	5	5	1	5	3	5	5	3
% Crustacea + % Mollusca	3	5	5	5	5	5	5	5	5
HBI	3	5	5	3	5	3	5	1	3
% Dominant taxon	5	5	3	5	5	3	1	5	1
% Collector-Gatherers	1	3	1	3	3	3	1	3	3
% Filterers	1	1	1	3	1	3	3	3	3
<b>Total score</b>	32	44	44	40	42	34	30	34	28
<b>Percent of maximum score</b>	0.533333	0.733333	0.733333	0.666667	0.7	0.566667	0.5	0.566667	0.466667
<b>Impairment classification</b>	<b>poor</b>	<b>optimal</b>	<b>optimal</b>	<b>sub-optimal</b>	<b>optimal</b>	<b>sub-optimal</b>	<b>poor</b>	<b>sub-optimal</b>	<b>poor</b>

\*Sites indicated by asterisks were dominated by lotic fauna, and were evaluated with the MDEQ index for streams in the text and charts. Scores and impairment classifications in this table (italicized) are included only for completeness and are not reliable indications of conditions at these sites. See text.

**Table 4d.** Metric values and scores for Montana Department of Transportation mitigated wetland sites. 2006.

	NOREM	ROCK CREEK RANCH	WAGNER MARSH	ALKALI LAKE 1	ALKALI LAKE 2
Total taxa	6	15	11	6	5
POET	1	0	0	0	0
Chironomidae taxa	2	4	4	3	0
Crustacea + Mollusca	1	4	3	1	1
% Chironomidae	82.93%	8.40%	13.51%	42.86%	0.00%
Orthoclaadiinae/Chir	0	0.2	0.6	0.666667	0
% Amphipoda	0.00%	0.00%	0.00%	0.00%	0.00%
% Crustacea + % Mollusca	7.32%	65.55%	23.42%	7.14%	9.52%
HBI	7.317073	7.638655	7.036036	7.785714	7.904762
% Dominant taxon	65.85%	47.06%	45.95%	42.86%	52.38%
% Collector-Gatherers	68.29%	56.30%	47.75%	28.57%	9.52%
% Filterers	17.07%	0.00%	0.90%	0.00%	0.00%
Total taxa	1	3	1	1	1
POET	1	1	1	1	1
Chironomidae taxa	1	3	3	3	1
Crustacea + Mollusca	1	3	1	1	1
% Chironomidae	1	5	5	1	5
Orthoclaadiinae/Chir	1	3	5	5	1
% Amphipoda	5	5	5	5	5
% Crustacea + % Mollusca	5	1	5	5	5
HBI	3	1	3	1	1
% Dominant taxon	1	3	3	3	1
% Collector-Gatherers	3	3	3	1	1
% Filterers	1	3	3	3	3
<b>Total score</b>	24	34	38	30	26
<b>Percent of maximum score</b>	0.4	0.566667	0.633333	0.5	0.433333
<b>Impairment classification</b>	<b>poor</b>	<b>sub-optimal</b>	<b>sub-optimal</b>	<b>poor</b>	<b>poor</b>

### **Literature cited**

Bollman, W. 1998. Montana Valleys and Foothill Prairies Ecoregion. Master's Thesis. (M.S.) University of Montana. Missoula, Montana.

Bukantis, R. 1998. Rapid bioassessment macroinvertebrate protocols: Sampling and sample analysis SOP's. Working draft. Montana Department of Environmental Quality. Planning Prevention and Assistance Division. Helena, Montana.

McCune, B. and J.B. Grace. 2002. Analysis of Ecological Communities. MjM Software Design, Gleneden Beach, Oregon, USA.

McCune, B. and M.J. Mefford. 2002. PC-ORD. Multivariate Analysis of Ecological Data, Version 4. MjM Software Design, Gleneden Beach, Oregon, USA.

Stribling, J.B., J. Lathrop-Davis, M.T. Barbour, J.S. White, and E.W. Leppo. 1995. Evaluation of environmental indicators for the wetlands of Montana: the multimetric approach using benthic macroinvertebrates. Report to the Montana Department of Health and Environmental Science. Helena, Montana.

# Taxa Listing

Project ID: MDT06PBSJ  
RAI No.: MDT06PBSJ030

RAI No.: MDT06PBSJ030

Sta. Name: Ridgeway

Client ID:

Date Coll.:

No. Jars: 1

STORET ID:

Taxonomic Name	Count	PRA	Unique	Stage	Qualifier	BI	Function
<b>Non-Insect</b>							
Acari	1	0.98%	Yes	Unknown		5	PR
Ostracoda	1	0.98%	Yes	Unknown		8	CG
Lymnaeidae							
Lymnaeidae	2	1.96%	Yes	Immature		6	SC
Physidae							
Physidae	29	28.43%	Yes	Unknown		8	SC
Planorbidae							
<i>Gyraulus</i> sp.	2	1.96%	Yes	Unknown		8	SC
Talitridae							
<i>Hyalella</i> sp.	12	11.76%	Yes	Unknown		8	CG
<b>Odonata</b>							
Coenagrionidae							
<i>Enallagma</i> sp.	2	1.96%	Yes	Larva		7	PR
Libellulidae							
Libellulidae	1	0.98%	Yes	Larva	Early Instar	9	PR
<b>Ephemeroptera</b>							
Baetidae							
<i>Callibaetis</i> sp.	2	1.96%	Yes	Larva		9	CG
<b>Coleoptera</b>							
Dytiscidae							
<i>Hygrotus</i> sp.	1	0.98%	Yes	Adult		5	PR
Halplidae							
<i>Halplus</i> sp.	11	10.78%	Yes	Larva		5	PH
<b>Chironomidae</b>							
Chironomidae							
<i>Ablabesmyia</i> sp.	1	0.98%	Yes	Larva		8	CG
<i>Apedilum</i> sp.	4	3.92%	Yes	Larva		11	CG
Chironomidae	1	0.98%	No	Pupa		10	CG
<i>Corynoneura</i> sp.	2	1.96%	Yes	Larva		7	CG
<i>Cricotopus (Cricotopus)</i> sp.	2	1.96%	Yes	Larva		7	SH
<i>Cricotopus (Isocladius)</i> sp.	1	0.98%	Yes	Larva		7	SH
Orthoclaadiinae	2	1.96%	No	Larva	Early Instar	6	CG
<i>Orthocladus</i> sp.	3	2.94%	Yes	Larva		6	CG
<i>Paratanytarsus</i> sp.	21	20.59%	Yes	Larva		6	CG
<i>Psectrocladius</i> sp.	1	0.98%	Yes	Larva		8	CG
<b>Sample Count</b>	<b>102</b>						

# Metrics Report

Project ID: MDT06PBSJ  
 RAI No.: MDT06PBSJ030  
 Sta. Name: Ridgeway  
 Client ID:  
 STORET ID:  
 Coll. Date:

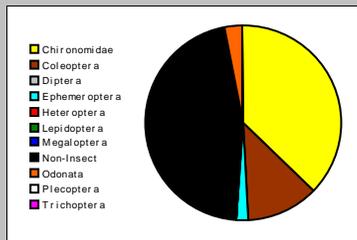
## Abundance Measures

Sample Count: 102  
 Sample Abundance: 382.50 26.67% of sample used

Coll. Procedure:  
 Sample Notes:

## Taxonomic Composition

Category	R	A	PRA
Non-Insect	6	47	46.08%
Odonata	2	3	2.94%
Ephemeroptera	1	2	1.96%
Plecoptera			
Heteroptera			
Megaloptera			
Trichoptera			
Lepidoptera			
Coleoptera	2	12	11.76%
Diptera			
Chironomidae	8	38	37.25%

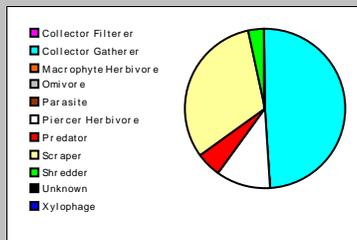


## Dominant Taxa

Category	A	PRA
Physidae	29	28.43%
Paratanytarsus	21	20.59%
Hyalella	12	11.76%
Halipilus	11	10.78%
Apedilum	4	3.92%
Orthocladus	3	2.94%
Orthoclaadiinae	2	1.96%
Lymnaeidae	2	1.96%
Gvraulus	2	1.96%
Enallaema	2	1.96%
Cricotopus (Cricotopus)	2	1.96%
Corynoneura	2	1.96%
Callibaetis	2	1.96%
Cricotopus (Isociadius)	1	0.98%
Ablabesmyia	1	0.98%

## Functional Composition

Category	R	A	PRA
Predator	4	5	4.90%
Parasite			
Collector Gatherer	9	50	49.02%
Collector Filterer			
Macrophyte Herbivore			
Piercer Herbivore	1	11	10.78%
Xylophage			
Scraper	3	33	32.35%
Shredder	2	3	2.94%
Omnivore			
Unknown			

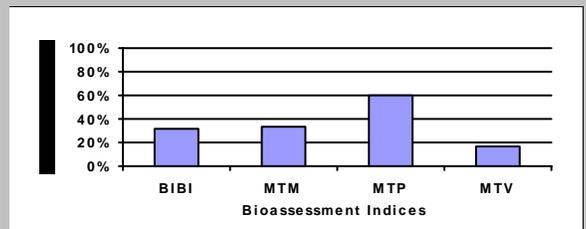


## Metric Values and Scores

Metric	Value	BIBI	MTP	MTV	MTM
<i>Composition</i>					
Taxa Richness	19	1	2		1
Non-Insect Percent	46.08%				
E Richness	1	1		0	
P Richness	0	1		0	
T Richness	0	1		0	
EPT Richness	1		0		0
EPT Percent	1.96%		0		0
Oligochaeta+Hirudinea Percent					
Baetidae/Ephemeroptera	1.000				
Hydropsychidae/Trichoptera	0.000				
<i>Dominance</i>					
Dominant Taxon Percent	28.43%		3		2
Dominant Taxa (2) Percent	49.02%				
Dominant Taxa (3) Percent	60.78%	3			
Dominant Taxa (10) Percent	86.27%				
<i>Diversity</i>					
Shannon H (loge)	2.222				
Shannon H (log2)	3.206		3		
Margalef D	3.917				
Simpson D	0.155				
Evenness	0.086				
<i>Function</i>					
Predator Richness	4		2		
Predator Percent	4.90%	1			
Filterer Richness	0				
Filterer Percent	0.00%			3	
Collector Percent	49.02%		3		3
Scraper+Shredder Percent	35.29%		3		1
Scraper/Filterer	0.000				
Scraper/Scraper+Filterer	0.000				
<i>Habit</i>					
Burrower Richness	0				
Burrower Percent	0.00%				
Swimmer Richness	3				
Swimmer Percent	13.73%				
Clinger Richness	2	1			
Clinger Percent	2.94%				
<i>Characteristics</i>					
Cold Stenotherm Richness	0				
Cold Stenotherm Percent	0.00%				
Hemoglobin Bearer Richness	3				
Hemoglobin Bearer Percent	6.86%				
Air Breather Richness	1				
Air Breather Percent	0.98%				
<i>Voltinism</i>					
Univoltine Richness	5				
Semivoltine Richness	3	3			
Multivoltine Percent	41.18%		2		
<i>Tolerance</i>					
Sediment Tolerant Richness	2				
Sediment Tolerant Percent	3.92%				
Sediment Sensitive Richness	0				
Sediment Sensitive Percent	0.00%				
Metals Tolerance Index	2.805				
Pollution Sensitive Richness	0				
Pollution Tolerant Percent	48.04%	1		0	
Hilsenhoff Biotic Index	7.010		0		0
Intolerant Percent	0.00%				
Supertolerant Percent	49.02%				
CTQa	100.500				

## Bioassessment Indices

BioIndex	Description	Score	Pct	Rating
BIBI	B-IBI (Karr et al.)	16	32.00%	
MTP	Montana DEQ Plains (Bukantis 1998)	18	60.00%	Slight
MTV	Montana Revised Valleys/Foothills (Bollman 1998)	3	16.67%	Severe
MTM	Montana DEQ Mountains (Bukantis 1998)	7	33.33%	Moderate



## **Appendix G**

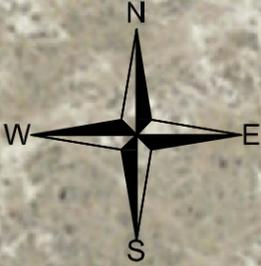
---

**WETLANDS 1 - 8 AND 10 - 16:  
2006 FIGURES 2 & 3**

---

*MDT Wetland Mitigation Monitoring  
Ridgeway Wetland Complex  
Ekalaka, Montana*

# Figure 2 Monitoring Activity Locations 2006



SCALE 1" = 50 ft

**Legend**

- Monitoring Area Limits ———
- Photograph Point ○
- Aerial Reference Point △
- Soil Sample ●

Base photograph July 5, 2006

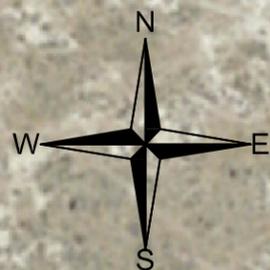


PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-1 WETLAND MITIGATION</b>	DRAWING TITLE <b>MONITORING ACTIVITY LOCATIONS 2006</b>	PROJECT NO: B43054.00 0412W1	DRAWN: SH/JR
		LOCATION: RIDGEWAY COMPLEX W-1	PROJ MGR: J. BERGLUND
SCALE: 1" = 50'		CHECKED: LB	APP'VD: JB
FILE NAME: 2006 W01BASE.dwg			

3810 Valley Commons Drive  
 Suite 4  
 Bozeman, MT 59718



# Figure 3 Mapped Site Features 2006

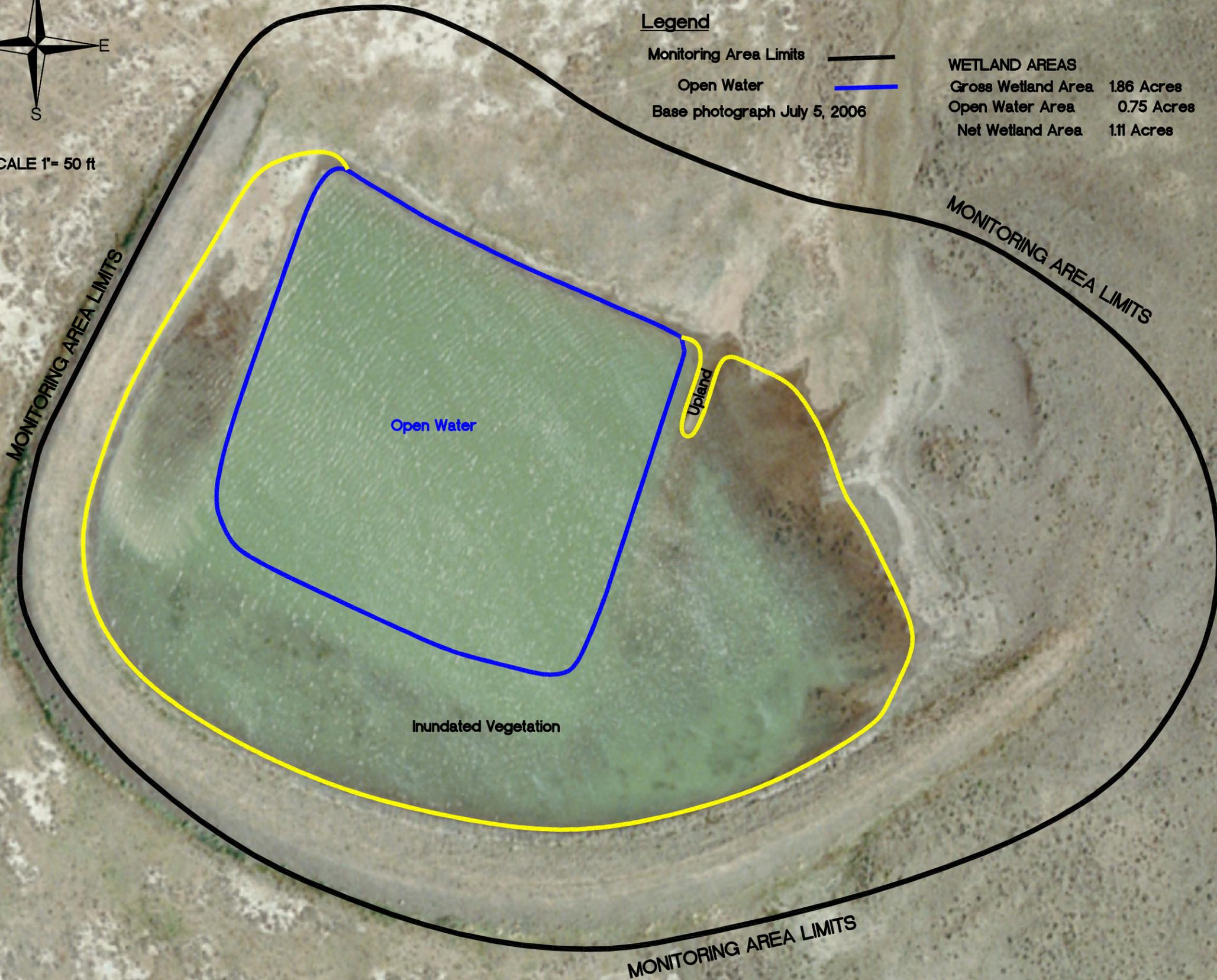


SCALE 1" = 50 ft

### Legend

- Monitoring Area Limits
- Open Water
- Base photograph July 5, 2006

**WETLAND AREAS**  
 Gross Wetland Area 1.86 Acres  
 Open Water Area 0.75 Acres  
 Net Wetland Area 1.11 Acres



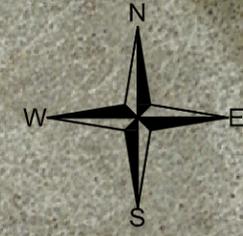
PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-1 WETLAND MITIGATION</b>	DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b>	PROJECT NO: B43054.00 0412W1 LOCATION: RIDGEWAY COMPLEX W-1 SCALE: 1" = 50'	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB / APPVD: JB
		3810 Valley Commons Drive Suite 4 Bozeman, MT 59718	
FIGURE <span style="font-size: 2em; font-weight: bold;">3</span> OF		REV - Oct/26/2006	

# Figure 2 Monitoring Activity Locations 2006

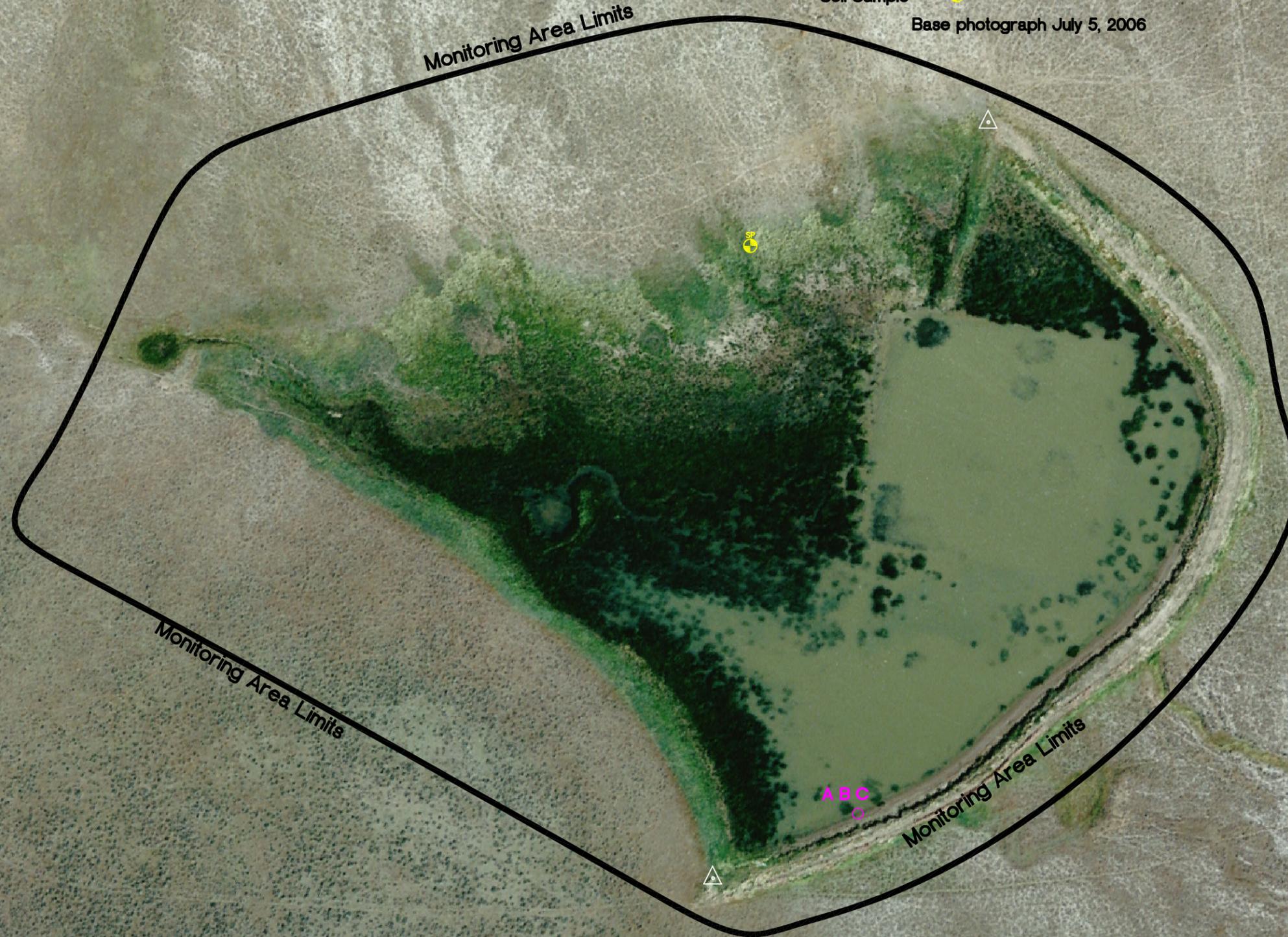
## Legend

- Monitoring Area Limits ———
- Photograph Point ○
- Aerial Reference Point △
- Soil Sample ●

Base photograph July 5, 2006



SCALE 1" = 100ft



PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-2 WETLAND MITIGATION</b>	DRAWING TITLE <b>MONITORING ACTIVITY LOCATIONS 2006</b>	PROJ NO: B43054.00 0412W2	DRAWN: SH/JR
		LOCATION: RIDGEWAY COMPLEX W-2	PROJ MGR: J. BERGLUND
		SCALE: 1" = 100'	CHECKED: LB
		FILE NAME: 2006 W02BASE.dwg	APPVD: JB

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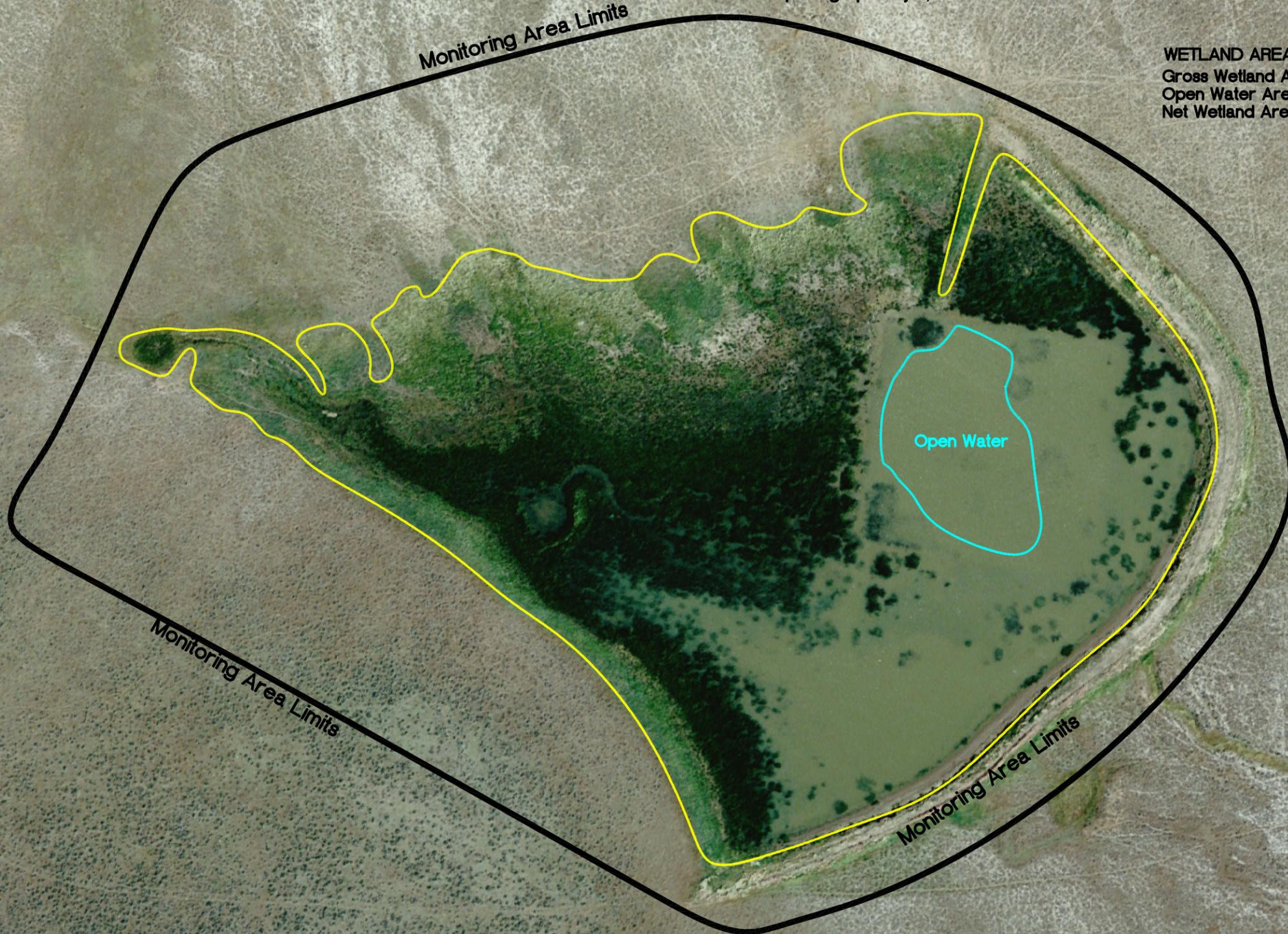


# Figure 3 Mapped Site Features 2006

- Legend**
- Monitoring Area Limits ———
  - Open Water Limits ———
  - Wetland Limits ———
- Base photograph July 5, 2006



**WETLAND AREAS**  
 Gross Wetland Area = 6.73 Acres  
 Open Water Area = 0.42 Acres  
 Net Wetland Area = 6.31 Acres



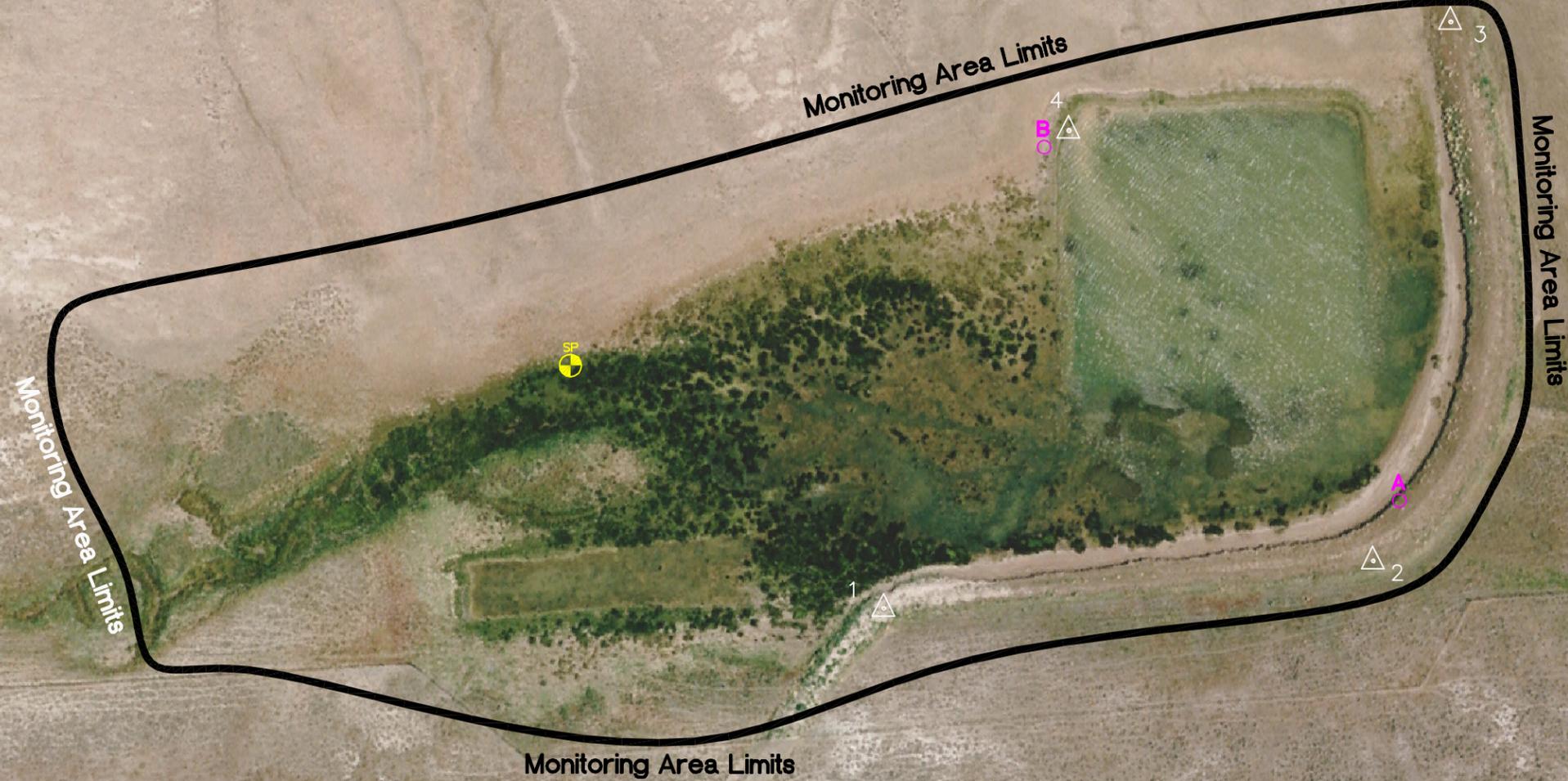
PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-2 WETLAND MITIGATION</b>	DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b>	
	PROJECT NO: B43054.00 0412W2	DRAWN: SH/JR
LOCATION: RIDGEWAY COMPLEX W-2	PROJ MGR: J. BERGLUND	CHECKED: LB / APPVD: JB
SCALE: 1" = 100'	FILE NAME: 2006 W02BASE.dwg	
3810 Valley Commons Drive Suite 4 Bozeman, MT 59718		
		
FIGURE <b>3</b> OF		
REV - Nov/08/2006		

# Figure 2 Monitoring Activity Locations 2006



## Legend

- Monitoring Area Limits ———
- Photograph Point ○
- Aerial Reference Point △
- Soil Sample ⊕
- Base photograph July 5, 2006

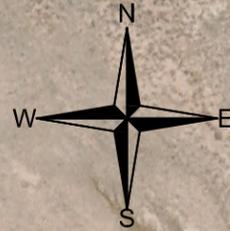


PROJECT NAME	MDT RIDGEWAY COMPLEX W-3 WETLAND MITIGATION
DRAWING TITLE	MONITORING ACTIVITY LOCATIONS 2006
PROJ. NO:	B43054.00 0412W3
LOCATION:	RIDGEWAY COMPLEX W-3
SCALE:	1" = 100'
FILE NAME:	2006 W03BASE.dwg
DRAWN:	SH/JR
PROJ. MGR.:	J. BERGLUND
CHECKED:	LB
APP'D:	JB

3810 Valley Commons Drive  
Suite 4  
Bozeman, MT 59718



# Figure 3 Mapped Site Features 2006

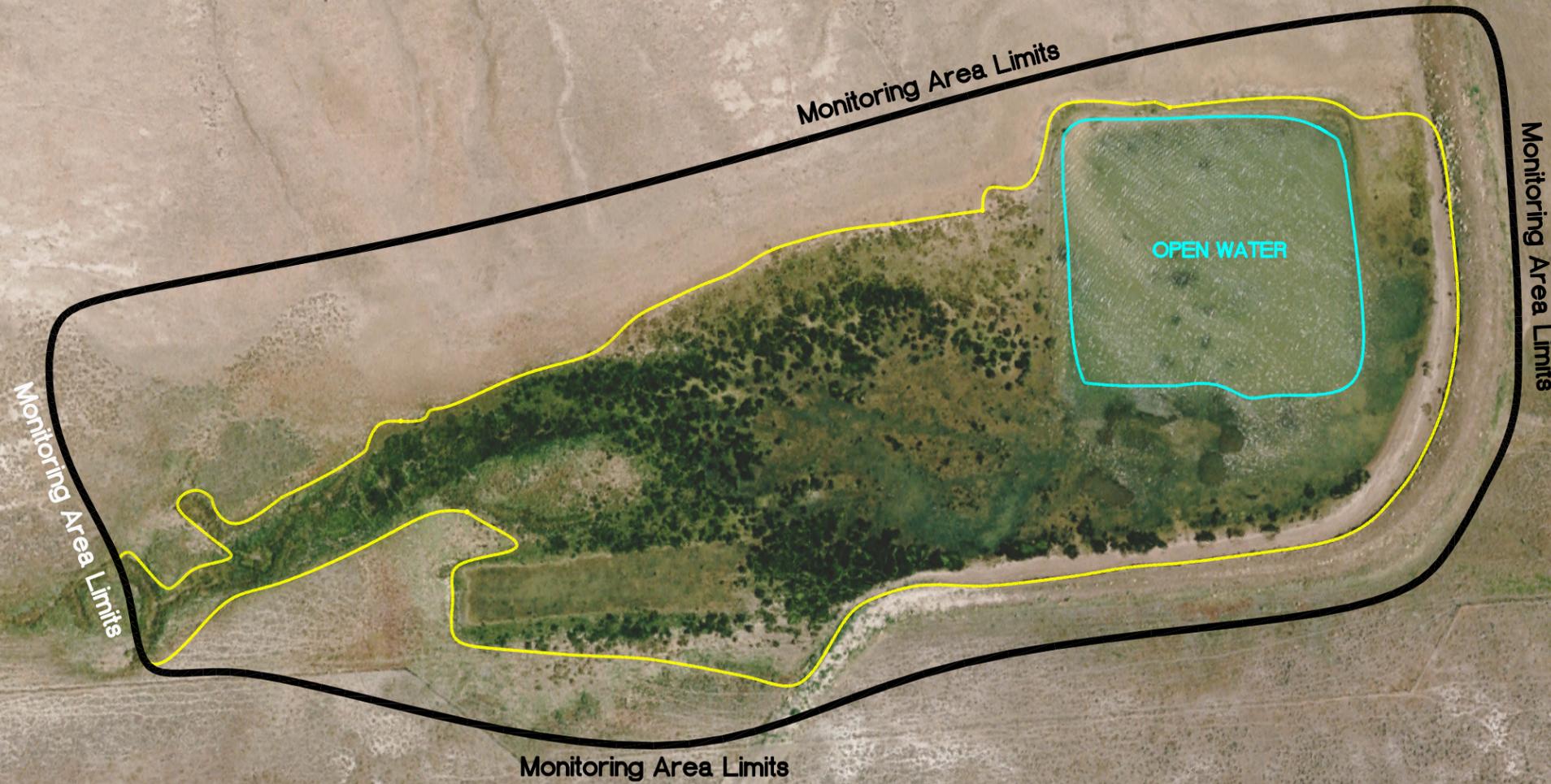


SCALE 1" = 100ft

WETLAND AREAS (emergent)  
 Gross Wetland Area = 4.31 Acres  
 Open Water Area = 0.80 Acres  
 Net Wetland Area = 3.51 Acres

### Legend

Monitoring Area Limits ———  
 Wetland Limits (emergent) ———  
 Open Water Limits ———  
 Base photograph July 5, 2006



 <p>3810 Valley Commons Drive Suite 4 Bozeman, MT 59718</p>	PROJ. NO: B43054.00 0412W3 LOCATION: RIDGEWAY COMPLEX W-3 SCALE: 1" = 100' FILE NAME: 2006 W03BASE.dwg	DRAWN: SH/JR PROJ. MGR.: J. BERGLUND CHECKED: LB APPVD: JB	PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-3 WETLAND MITIGATION</b>
	DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b>		
FIGURE <b>3</b> OF REV - Nov/03/2006			

# Figure 2 Monitoring Activity Locations 2006



SCALE 1" = 50 ft

## Legend

- Monitoring Area Limits
  - Photograph Point
  - Aerial Reference Point
  - Soil Sample
- Base photograph July 5, 2006



PROJECT NAME

MDT RIDGEWAY COMPLEX W-4 WETLAND MITIGATION

DRAWING TITLE

MONITORING ACTIVITY LOCATIONS 2006

DRAWN: SH/JR

PROJ MGR: J. BERGLUND

CHECKED: LB APPVD: JB

PROJ NO: B43054.00 0412W4

LOCATION: RIDGEWAY COMPLEX W-4

SCALE: 1" = 50'

FILE NAME: 2006 W04BASE.dwg

3810 Valley Commons Drive  
Suite 4  
Bozeman, MT 59718

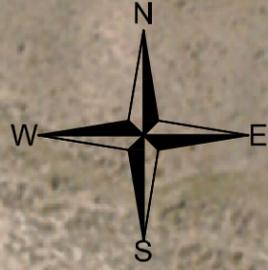


FIGURE

2 OF

REV -  
Oct/26/2006

# Figure 3 Mapped Site Features 2006



SCALE 1" = 50 ft

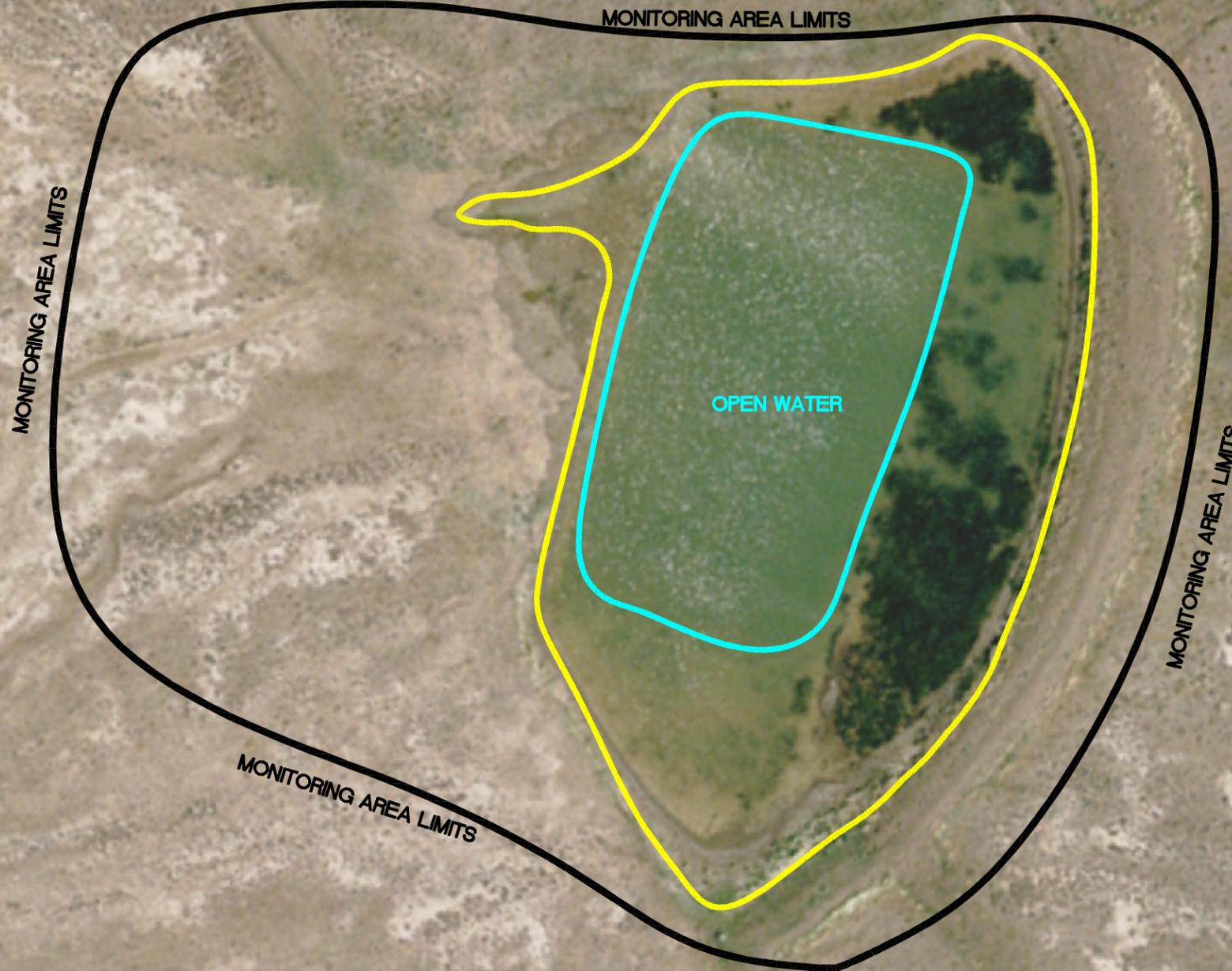
### Legend

- Monitoring Area Limits
- Open Water Limits
- Emergent Wetland Limit

Base photograph July 5, 2006

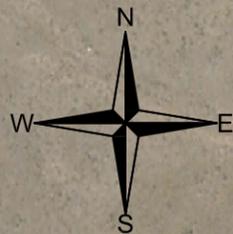
### WETLAND AREA (emergent)

- Gross Wetland Area = 0.97 Acres
- Open Water Area = 0.40 Acres
- Net Wetland Area = 0.57 Acres



PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-4 WETLAND MITIGATION</b>	DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b>	PROJ. NO: B43054.00 0412W4 LOCATION: RIDGEWAY COMPLEX W-4 SCALE: 1" = 50'	DRAWN: SH/JR PROJ. MGR: J. BERGLUND CHECKED: LB / APP'VD: JB	3810 Valley Commons Drive Suite 4 Bozeman, MT 59718 
FIGURE <span style="font-size: 2em; font-weight: bold;">3</span> OF 3		REV - Oct/30/2006		

# Figure 2 Monitoring Activity Locations 2006



SCALE 1" = 100 ft

### Legend

- Monitoring Area Limits
  - Photograph Point
  - Aerial Reference Point
  - Soil Sample
- Base photograph July 5, 2006



PROJECT NAME

MDT RIDGEWAY COMPLEX W-5 WETLAND MITIGATION

DRAWING TITLE

MONITORING ACTIVITY LOCATIONS 2006

DRAWN: SH/JR

PROJ NO: B43054.00 0412W5

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Suite 4  
Bozeman, MT 59718



FIGURE

2 OF

REV -  
Oct/27/2006

PROJ MGR: J. BERGLUND

LOCATION: RIDGEWAY COMPLEX W-5

3810 Valley Commons Drive  
Suite 4  
Bozeman, MT 59718



FIGURE

2 OF

REV -  
Oct/27/2006

CHECKED: LB

SCALE: 1" = 100'

3810 Valley Commons Drive  
Suite 4  
Bozeman, MT 59718



FIGURE

2 OF

REV -  
Oct/27/2006

APPVD: JB

FILE NAME: 2006 W05BASE.dwg

3810 Valley Commons Drive  
Suite 4  
Bozeman, MT 59718

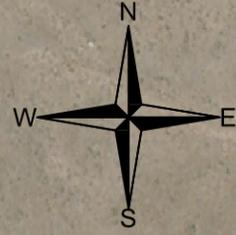


FIGURE

2 OF

REV -  
Oct/27/2006

# Figure 3 Mapped Site Features 2006

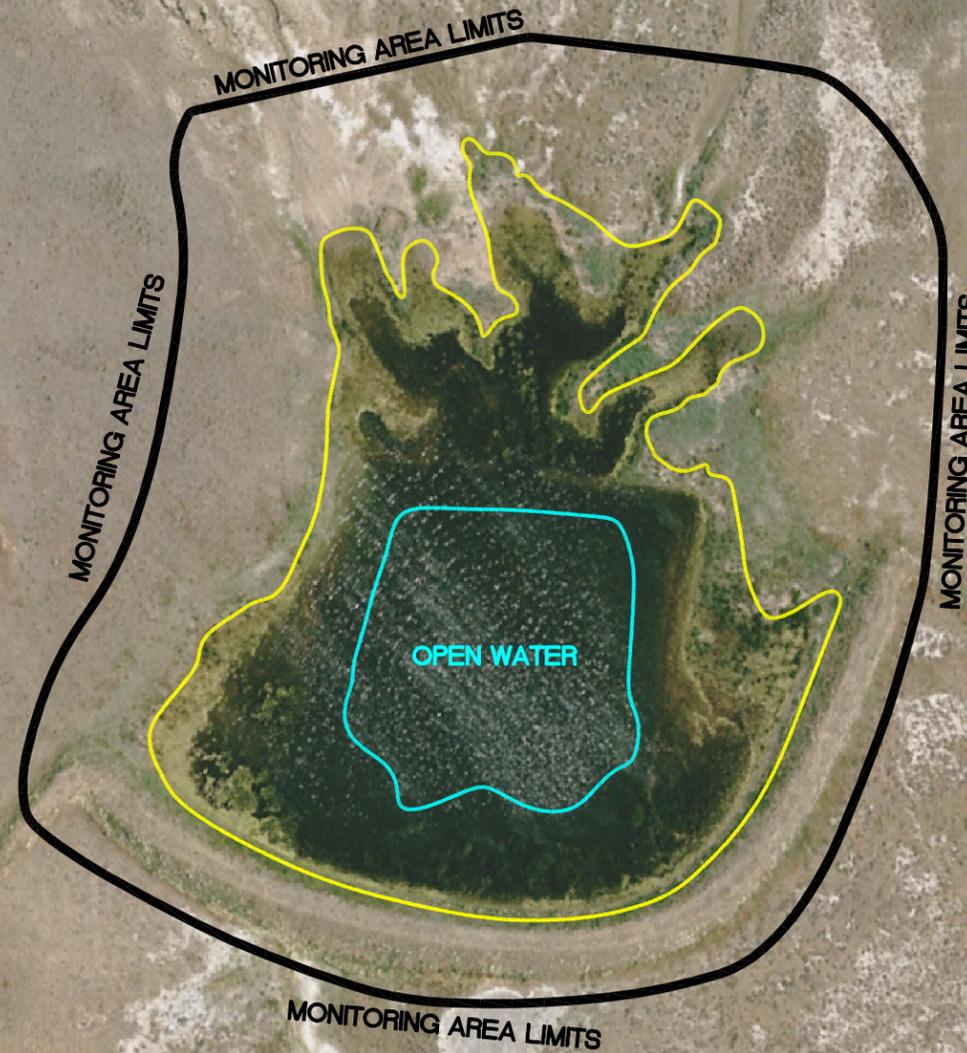


SCALE 1" = 100 ft

### Legend

- Monitoring Area Limits
- Open Water Limits
- Emergent Wetland Limit
- Base photograph July 5, 2006

- WETLAND AREAS (emergent)**
- Gross Wetland Area = 2.14 Acres
  - Open Water Area = 0.51 Acres
  - Net Wetland Area = 1.63 Acres



<p>PROJ. NO: B43054.00 0412W5</p> <p>LOCATION: RIDGEWAY COMPLEX W-5</p> <p>SCALE: 1" = 100'</p> <p>FILE NAME: 2006 W05BASE.dwg</p>	<p>DRAWN: SH/JR</p> <p>PROJ MGR: J. BERGLUND</p> <p>CHECKED: LB</p> <p>APPVD: JB</p>	<p>PROJECT NAME: MDT RIDGEWAY COMPLEX W-5 WETLAND MITIGATION</p> <p>DRAWING TITLE: MAPPED SITE FEATURES 2006</p>
<p>3810 Valley Commons Drive Suite 4 Bozeman, MT 59718</p>		
<p>FIGURE 3 OF 3</p>		
<p>REV - Oct/27/2006</p>		

# Figure 2 Monitoring Activity Locations 2006



## Legend

- Monitoring Area Limits
- Photograph Point
- Aerial Reference Point
- Soil Sample
- Base photograph July 5, 2006



PROJECT NAME  
**MDT RIDGEWAY COMPLEX W-6 WETLAND MITIGATION**

DRAWING TITLE  
**MONITORING ACTIVITY LOCATIONS 2006**

PROJ. NO: B43054.00 0412W6 | DRAWN: SH/JR  
 LOCATION: RIDGEWAY COMPLEX W-6 | PROJ. MGR.: J. BERGLUND  
 SCALE: 1" = 150' | CHECKED: LB | APPVD: JB  
 FILE NAME: 2006 W06BASE.dwg

FIGURE  
**2** OF  
 REV -  
 Oct/27/2006

3810 Valley Commons Drive  
 Suite 4  
 Bozeman, MT 59718



# Figure 3 Mapped Site Features 2006



## Legend

- Monitoring Area Limits
- Open Water Limits
- Emergent Wetland Limits
- Base photograph July 5, 2006

WETLAND AREA (emergent)  
 Gross Wetland Area =6.74 Acres  
 Open Water Area =0.16 Acres  
 Net Wetland Area =6.58 Acres

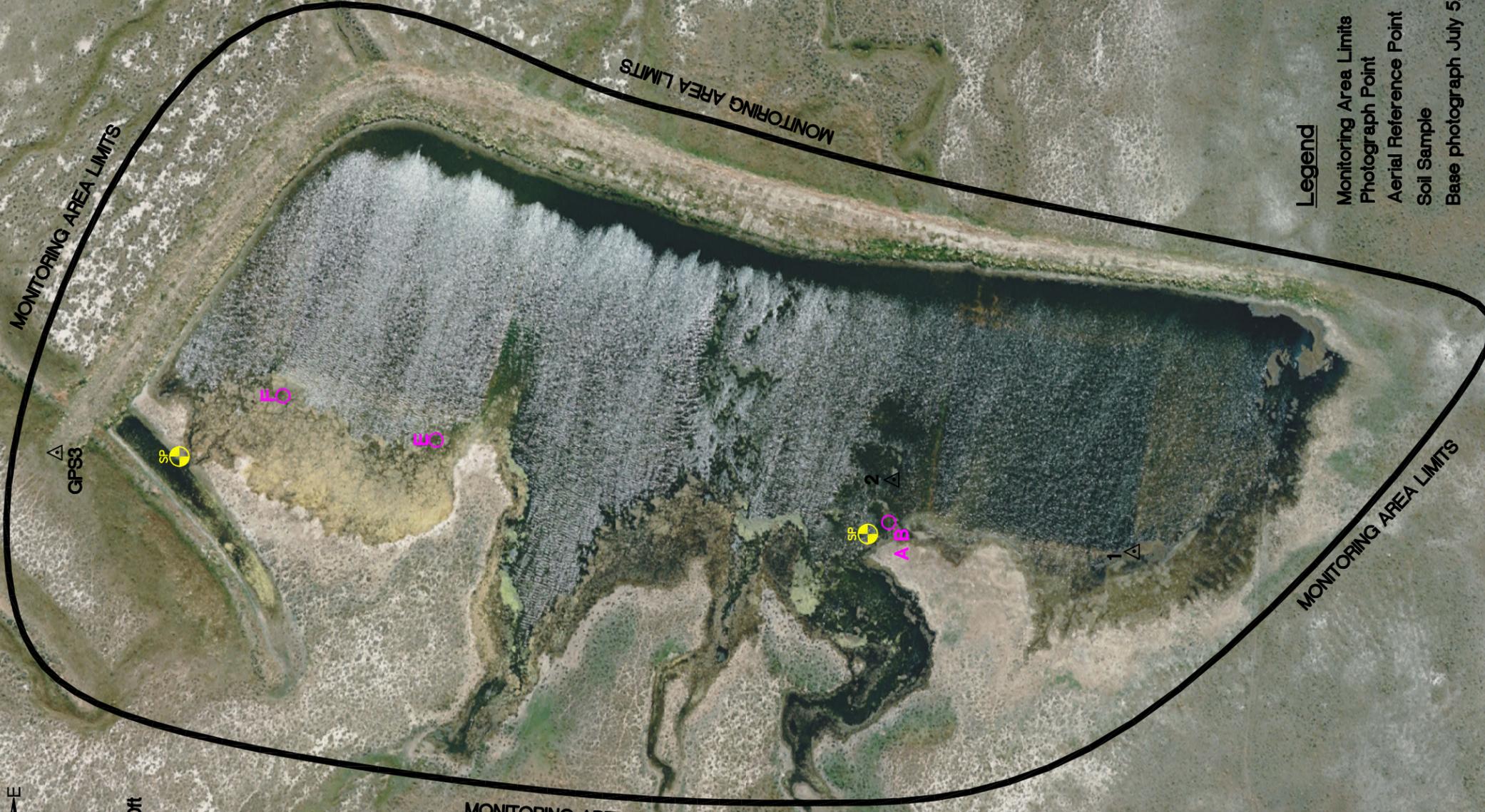


PROJ NO: B43054.00 0412W6 LOCATION: RIDGEWAY COMPLEX W-6 SCALE: 1" = 150' FILE NAME: 2006 W06BASE.dwg	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB APPVD: JB	PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-6 WETLAND MITIGATION</b> DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b>
3810 Valley Commons Drive Suite 4 Bozeman, MT 59718		
FIGURE <b>3</b> OF		REV - Nov/08/2006

# Figure 2 Monitoring Activity Locations 2006



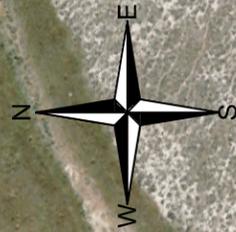
SCALE 1" = 100ft



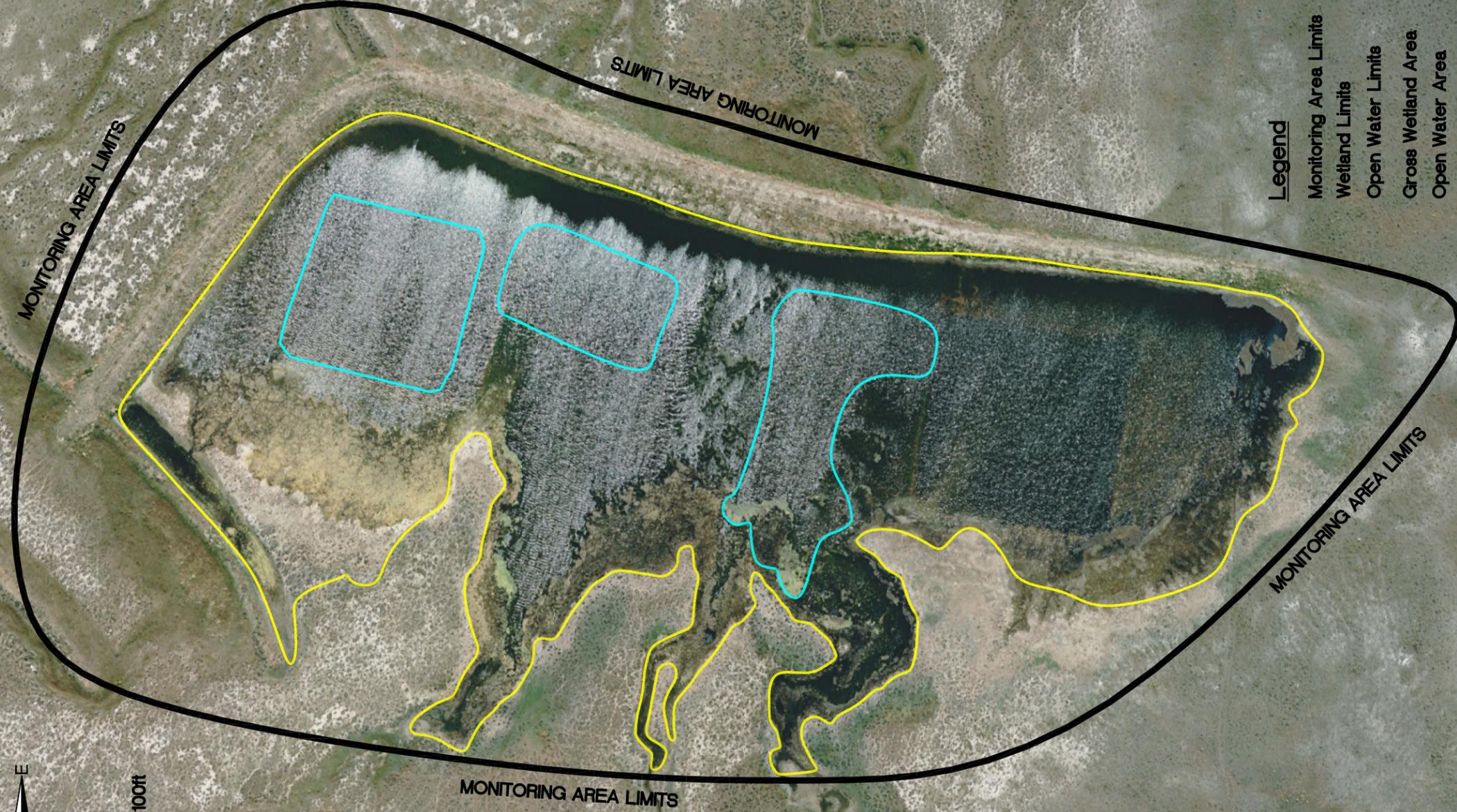
**Legend**

- Monitoring Area Limits
- Photograph Point
- △ Aerial Reference Point
- SP Soil Sample
- Base photograph July 5, 2006

# Figure 3 Mapped Site Features 2006



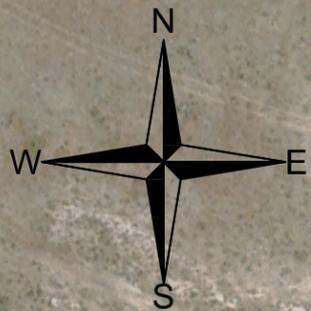
SCALE 1" = 100ft



**Legend**

- Monitoring Area Limits
  - Wetland Limits
  - Open Water Limits
  - Gross Wetland Area 6.02 Acres
  - Open Water Area 1.06 Acres
  - Net Wetland Area (W-7 + W-8) 4.96 Acres
- Base photograph July 5, 2006

# Figure 2 Monitoring Activity Locations 2006



SCALE 1" = 100ft

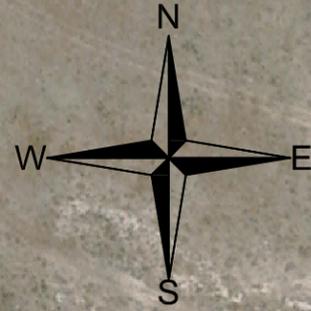
### Legend

- Monitoring Area Limits
- Photograph Point ○
- Aerial Reference Point △
- Soil Sample S
- Base photograph July 5, 2006



PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-10 WETLAND MITIGATION</b>	DRAWING TITLE <b>MONITORING ACTIVITY LOCATIONS 2006</b>	PROJ NO: B43054.00 0412W10 LOCATION: RIDGEWAY CMPLX W-10 SCALE: 1" = 50' FILE NAME: 2006 W10BASE.dwg	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB APPVD: JB
3810 Valley Commons Drive Suite 4 Bozeman, MT 59718			
FIGURE <span style="font-size: 2em;">2</span> OF		REV - Oct/27/2006	

# Figure 3 Mapped Site Features 2006

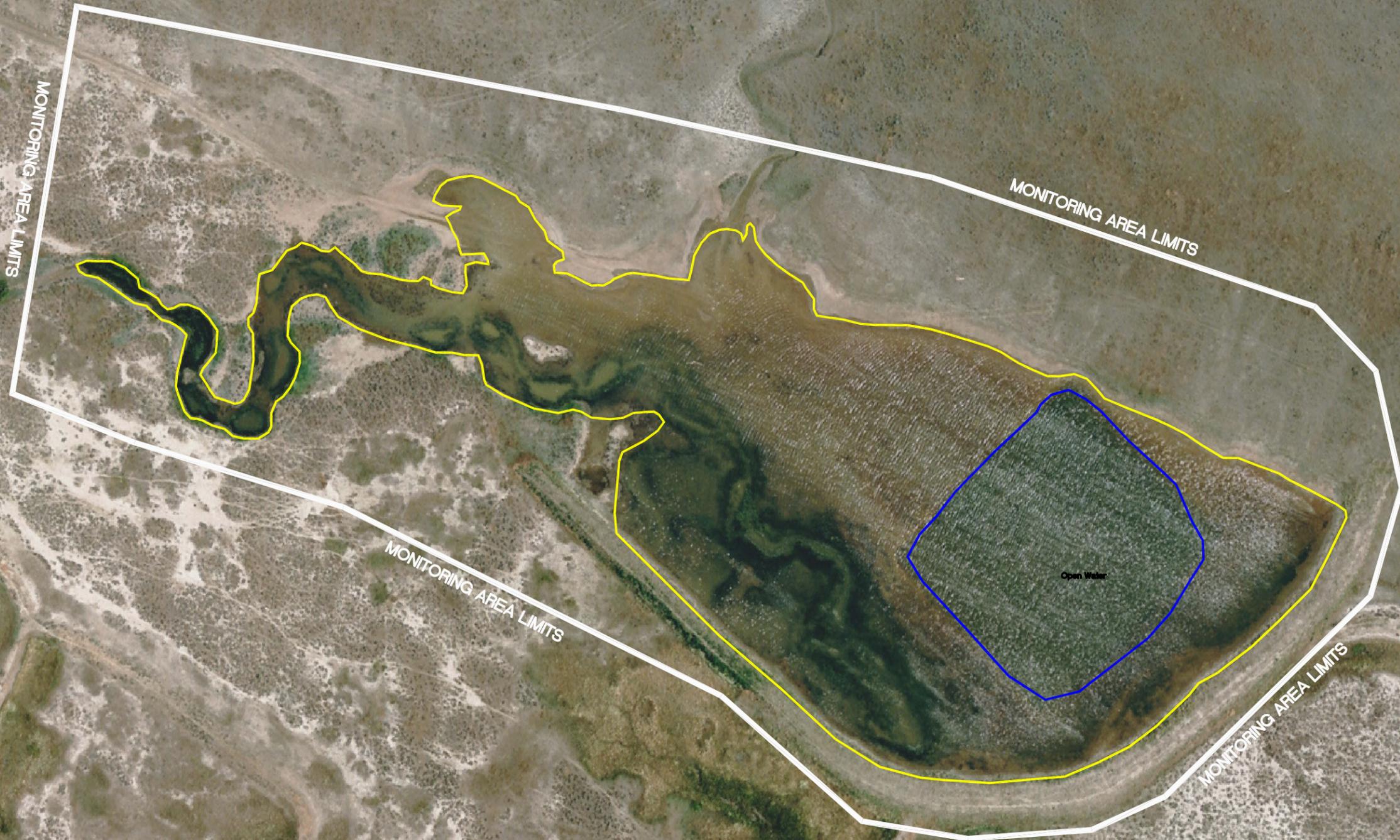


SCALE 1" = 100ft

### Legend

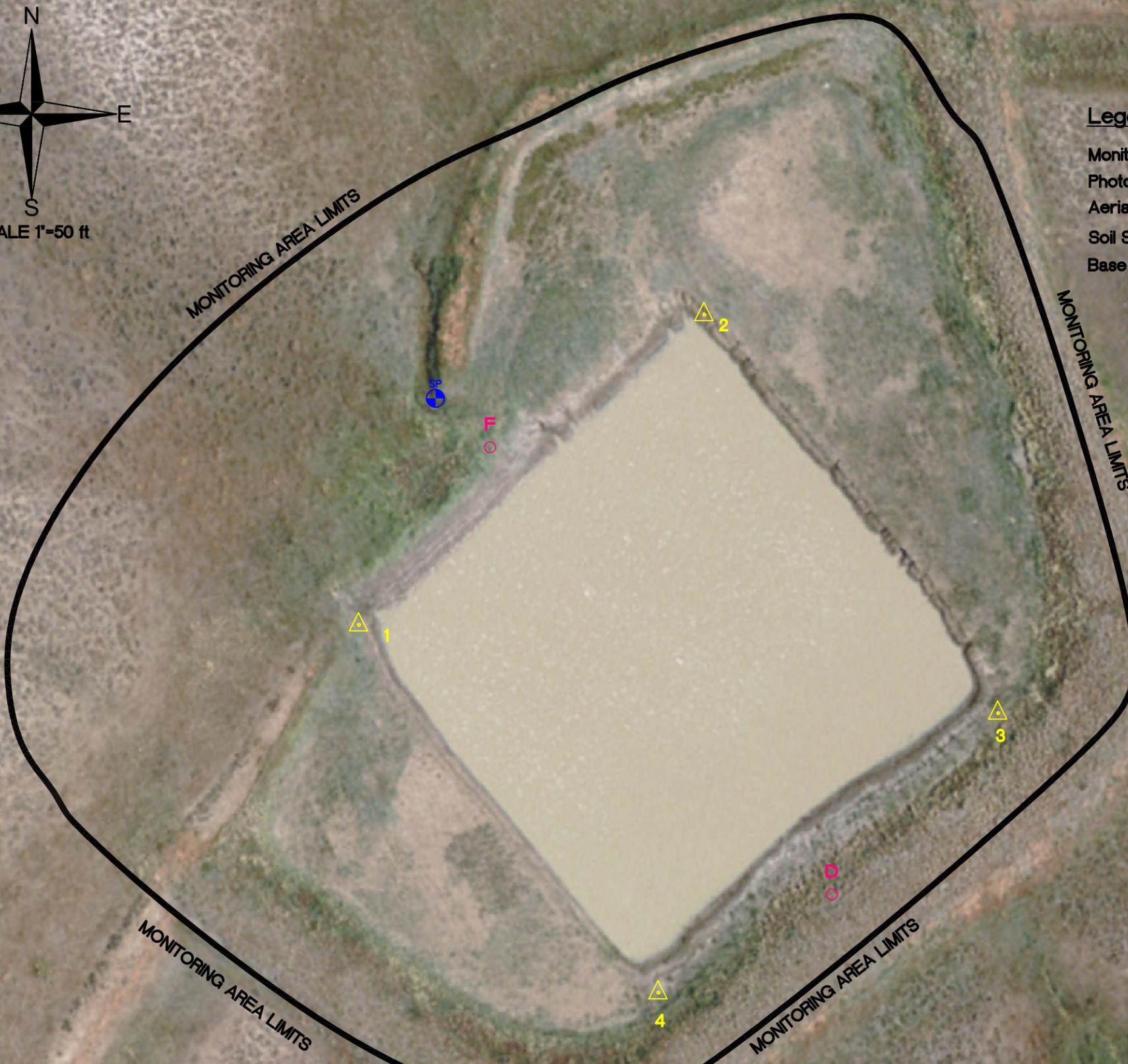
- Monitoring Area Limits
- Open Water
- Vegetation
- Base photograph July 5, 2006

Wetland Area  
 Gross Wetland Area 5.12 Acres  
 Open Water Area 0.96 Acres  
 Net Wetland Area 4.16 Acres



PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-10 WETLAND MITIGATION</b>	DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b>	PROJECT NO: B43054.00 0412W10 LOCATION: RIDGEWAY COMPLEX W-10 SCALE: 1" = 50' FILE NAME: 2006 W10BASE.dwg	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB APPVD: JB
		3810 Valley Commons Drive Suite 4 Bozeman, MT 59718	
FIGURE <span style="font-size: 2em; font-weight: bold;">3</span> OF		REV - Oct/27/2006	

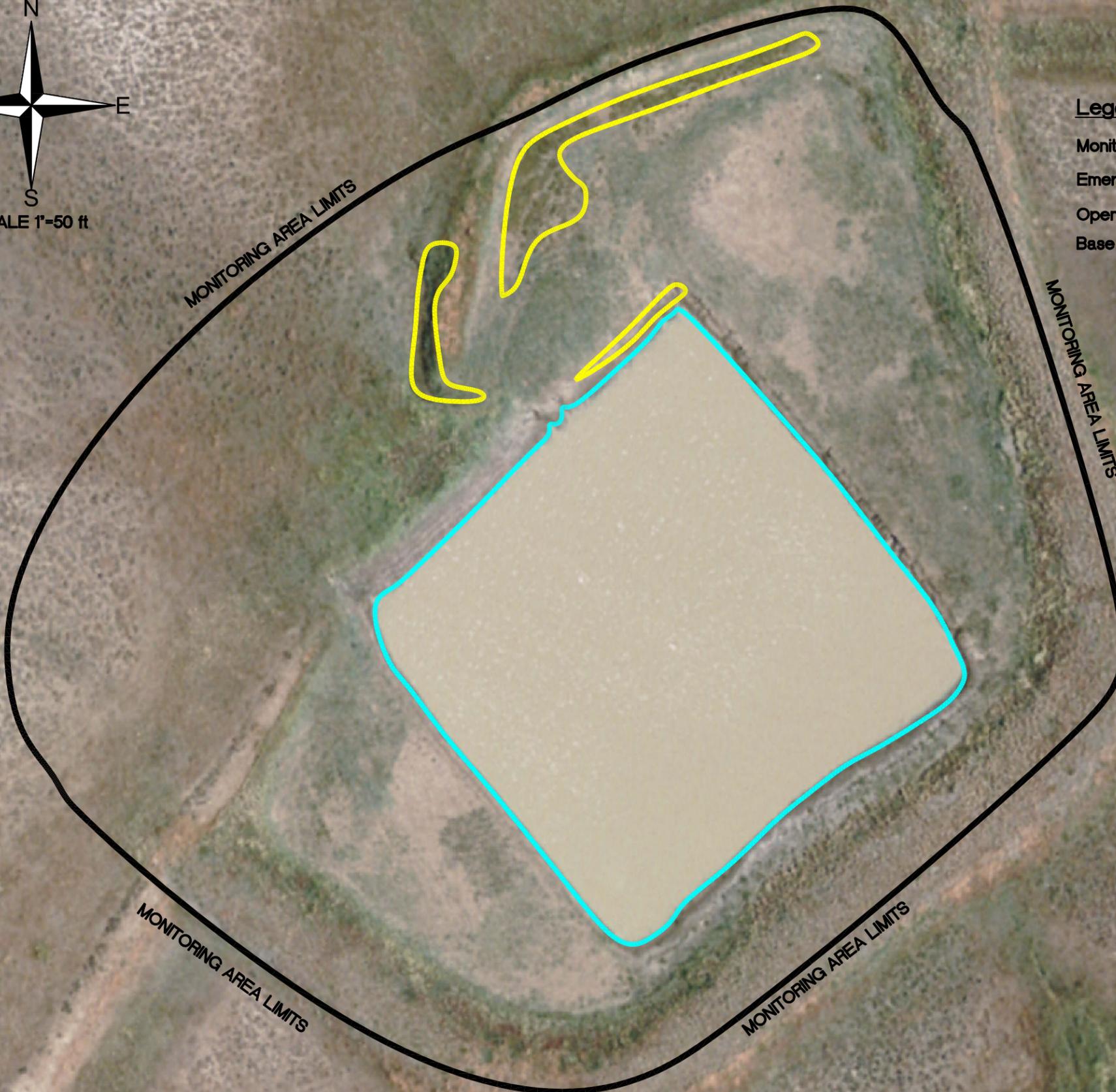
# Figure 2 Monitoring Activity Locations 2006



- Legend**
- Monitoring Area Limits
  - Photograph Points
  - Aerial Reference Point
  - Soil Sample
  - Base photograph July 5, 2006

PROJ NO: B43054.00 0412W11 LOCATION: RIDGEWAY COMPLEX W-11 SCALE: 1" = 50' FILE NAME: 2006 W11BASE.dwg	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB APPVD: JB	PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-11 WETLAND MITIGATION</b> DRAWING TITLE <b>MONITORING ACTIVITY LOCATIONS 2006</b>
3810 Valley Commons Drive Suite 4 Bozeman, MT 59718		
FIGURE <span style="font-size: 2em; font-weight: bold;">2</span> OF REV - Oct/27/2006		

# Figure 3 Mapped Site Features 2006



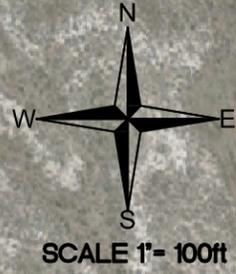
- Legend**
- Monitoring Area Limits ———
  - Emergent Wetland Limits ———
  - Open Water Limits ———
  - Base photograph July 5, 2006

**WETLAND AREAS**

Gross Wetland Area	0.89 Acres
Open Water Area	0.82 Acres
Net Wetland Area	0.07 Acres

<p>PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-11 WETLAND MITIGATION</b></p>	
<p>DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b></p>	
<p>PROJ NO: B43054.00 0412W11</p>	<p>DRAWN: SH/JR</p>
<p>LOCATION: RIDGEWAY COMPLEX W-11</p>	<p>PROJ MGR: J. BERGLUND</p>
<p>SCALE: 1" = 50'</p>	<p>CHECKED: LB / APPVD: JB</p>
<p>FILE NAME: 2006 W11BASE.dwg</p>	
<p>3810 Valley Commons Drive Suite 4 Bozeman, MT 59718</p>	
	
<p>FIGURE <b>3</b> OF</p>	
<p>REV - Nov/28/2006</p>	

# Figure 2 Monitoring Activity Locations 2006



### Legend

- Monitoring Area Limits
- Photograph Point
- Aerial Reference Point
- Soil Sample
- Base photograph July 5, 2006

PROJECT NAME: MDT RIDGEWAY COMPLEX W-12 WETLAND MITIGATION

DRAWING TITLE: MONITORING ACTIVITY LOCATIONS 2006

PROJ. NO: B43054.00 0412W12 | DRAWN: SH/JR

LOCATION: RIDGEWAY COMPLEX W-12 | PROJ. MGR.: J. BERGLUND

SCALE: 1" = 100' | CHECKED: LB | APPVD: JB

FILE NAME: 2006 W12BASE.dwg

3810 Valley Commons Drive  
Suite 4  
Bozeman, MT 59718

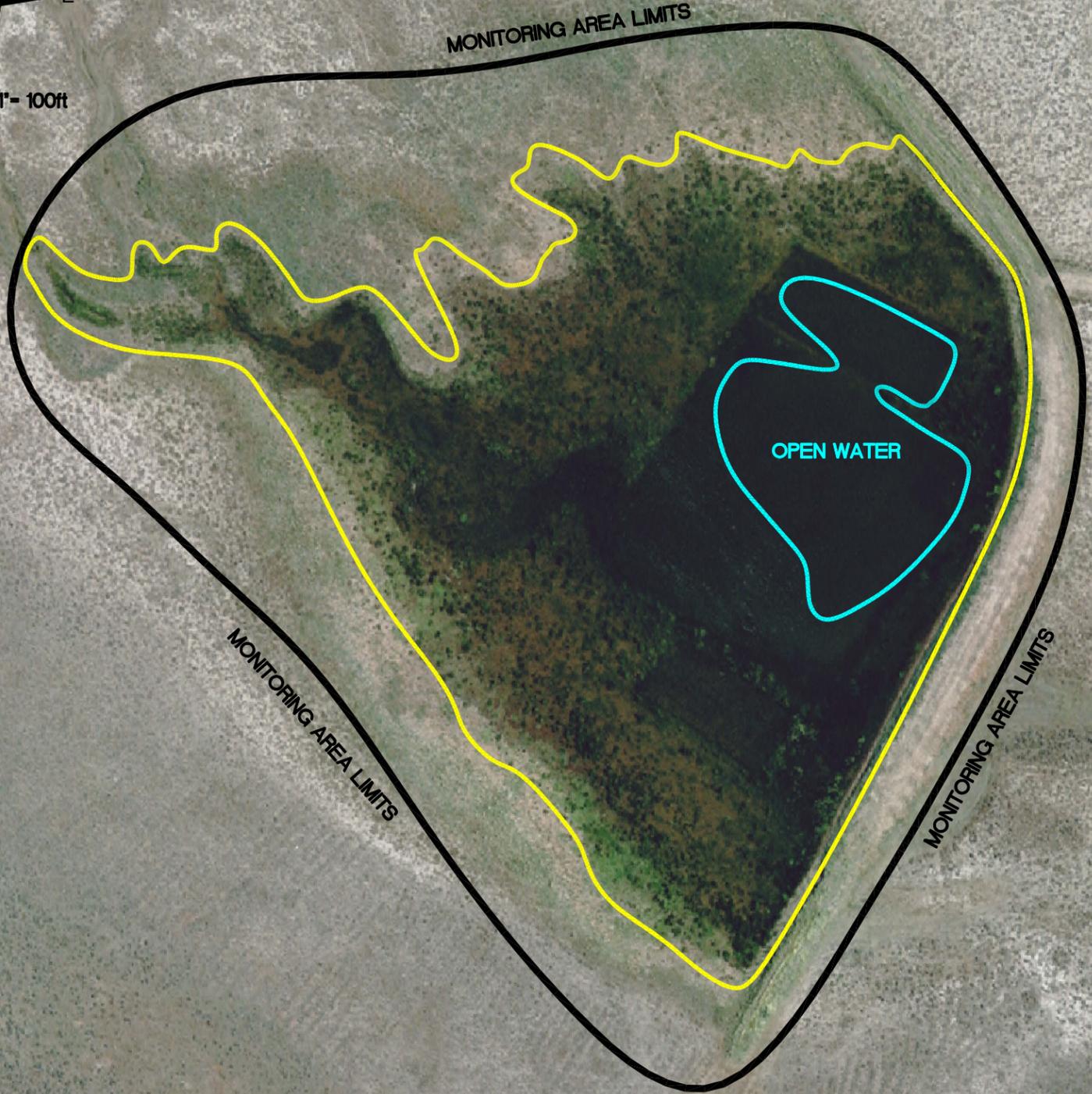
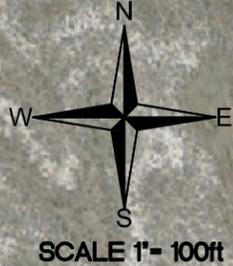


FIGURE

2 OF

REV -  
Oct/27/2006

# Figure 3 Mapped Site Features 2006



**Legend**

Monitoring Area Limits ———

Emergent Wetland Limits ———

Open Water Limits ———

Base photograph July 5, 2006

**WETLAND AREAS (emergent)**

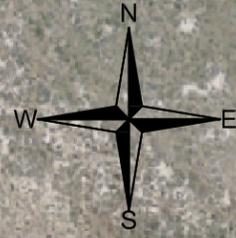
Gross Wetland Area 4.80 Acres

Open Water Area 0.59 Acres

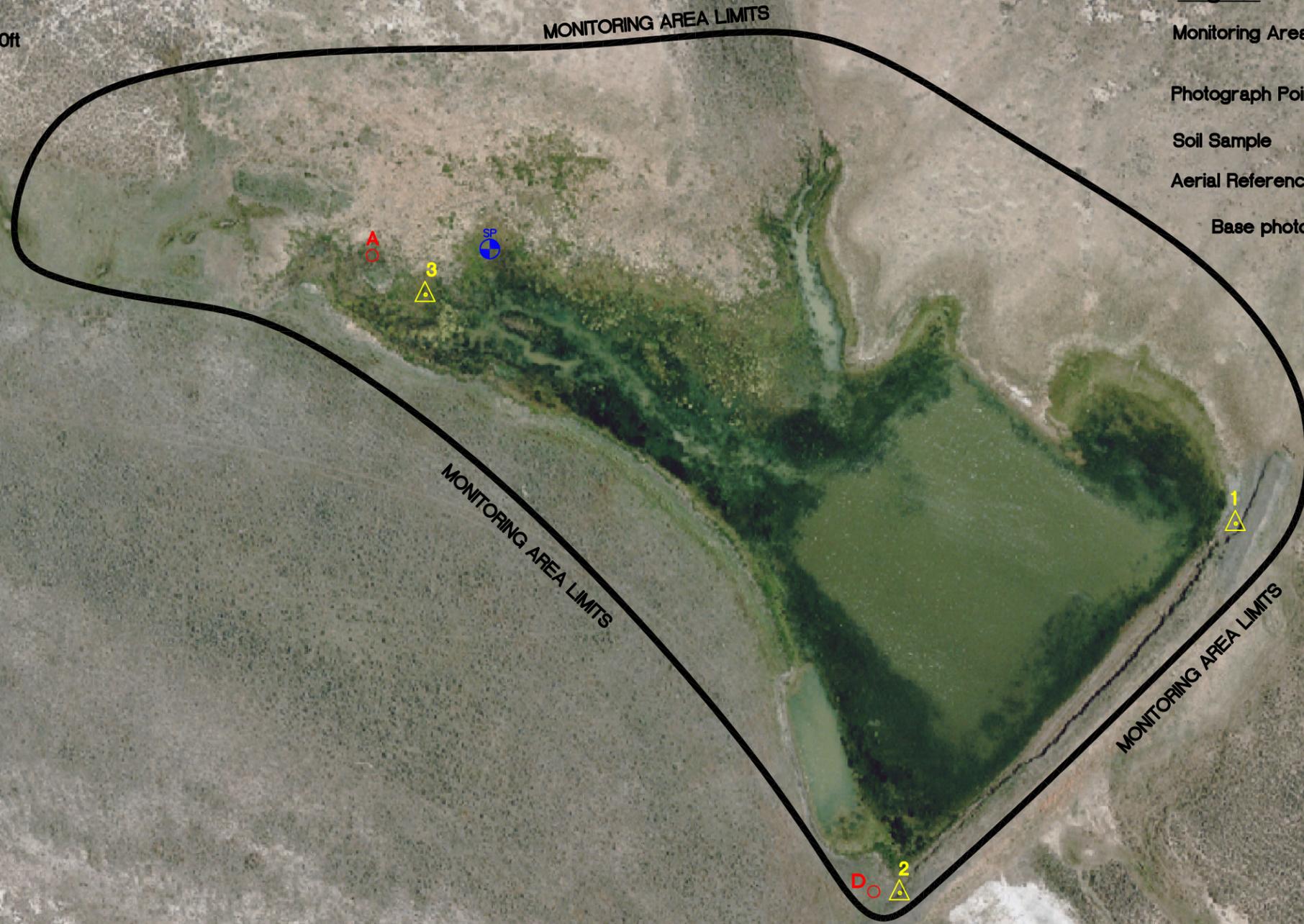
Net Wetland Area 4.21 Acres

 3810 Valley Commons Drive Suite 4 Bozeman, MT 59718	PROJ NO: B43054.00 0412W12 LOCATION: RIDGEWAY COMPLEX W-12 SCALE: 1" = 100' FILE NAME: 2006 W12BASE.dwg	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB APPVD: JB	PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-12 WETLAND MITIGATION</b> DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b>
	FIGURE <b>3</b> OF . REV - Nov/08/2006		

# Figure 2 Monitoring Activity Locations 2006



SCALE 1" = 100ft



### Legend

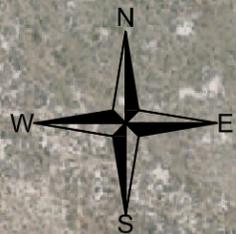
- Monitoring Area Limits
- Photograph Point
- Soil Sample
- Aerial Reference Point

Base photograph July 5, 2006

PROJECT NAME	MDT RIDGEWAY COMPLEX W-13 WETLAND MITIGATION
DRAWING TITLE	MONITORING ACTIVITY LOCATIONS 2006
PROJ. NO:	B43054.00 0412W13
LOCATION:	RIDGEWAY COMPLEX W-13
SCALE:	1" = 100'
FILE NAME:	2006 W13BASE.dwg
DRAWN:	SH/JR
PROJ. MGR.:	J. BERGLUND
CHECKED:	LB
APPVD:	JB

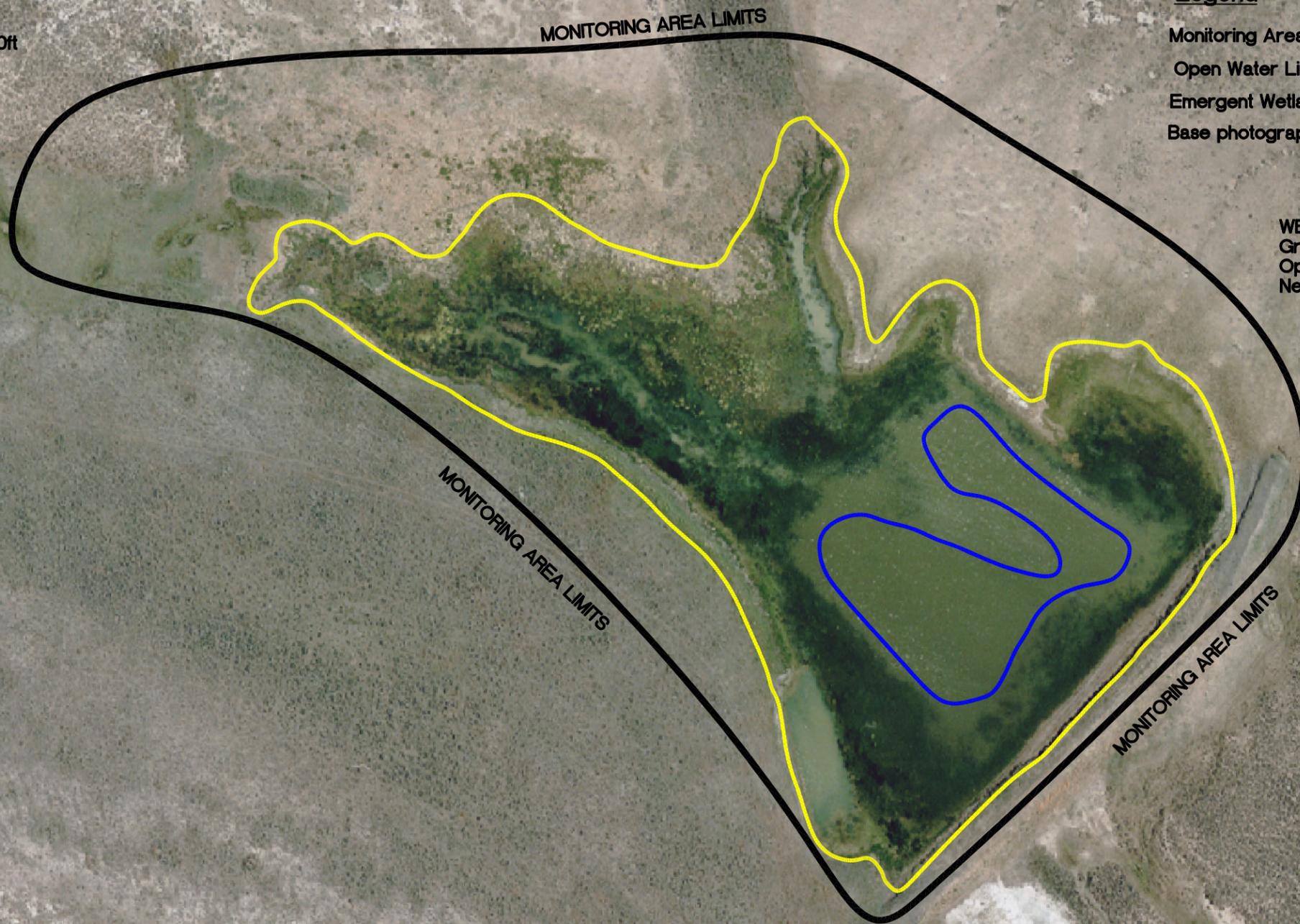
3810 Valley Commons Drive  
Suite 4  
Bozeman, MT 59718





SCALE 1" = 100ft

# Figure 3 Mapped Site Features 2006



### Legend

- Monitoring Area Limits
- Open Water Limits
- Emergent Wetland Limits
- Base photograph July 5, 2006

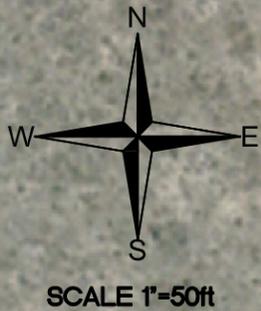
WETLAND AREAS:  
Gross Wetland Area = 4.05 Acres  
Open Water = 0.51 Acres  
Net Wetland Area = 3.54 Acres

PROJECT NAME		MDT RIDGEWAY COMPLEX W-13 WETLAND MITIGATION	
DRAWING TITLE		MAPPED SITE FEATURES 2006	
PROJ. NO:	B43054.00 0412W13	DRAWN:	SH/JR
LOCATION:	RIDGEWAY COMPLEX W-13	PROJ. MGR.:	J. BERGLUND
SCALE:	1" = 100'	CHECKED:	LB
FILE NAME:	2006 W13BASE.dwg	APPV'D:	JB

3810 Valley Commons Drive  
Suite 4  
Bozeman, MT 59718



# Figure 2 Monitoring Activity Locations 2006



- Legend**
- Monitoring Area Limits
  - Photograph Point
  - Aerial Reference Point
  - Soil Sample
- Base photograph July 5, 2006

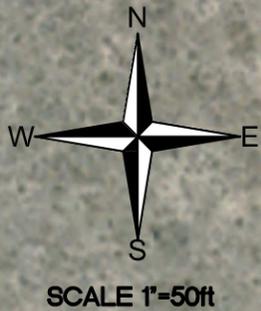


PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-14 WETLAND MITIGATION</b>	DRAWING TITLE <b>MONITORING ACTIVITY LOCATIONS 2006</b>	PROJECT NO: B43054.00 0412W14 LOCATION: RIDGEWAY COMPLEX W-14 SCALE: 1" = 50' FILE NAME: 2006 W14BASE.dwg	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB APPVD: JB
---	--	--	---

3810 Valley Commons Drive  
 Suite 4  
 Bozeman, MT 59718

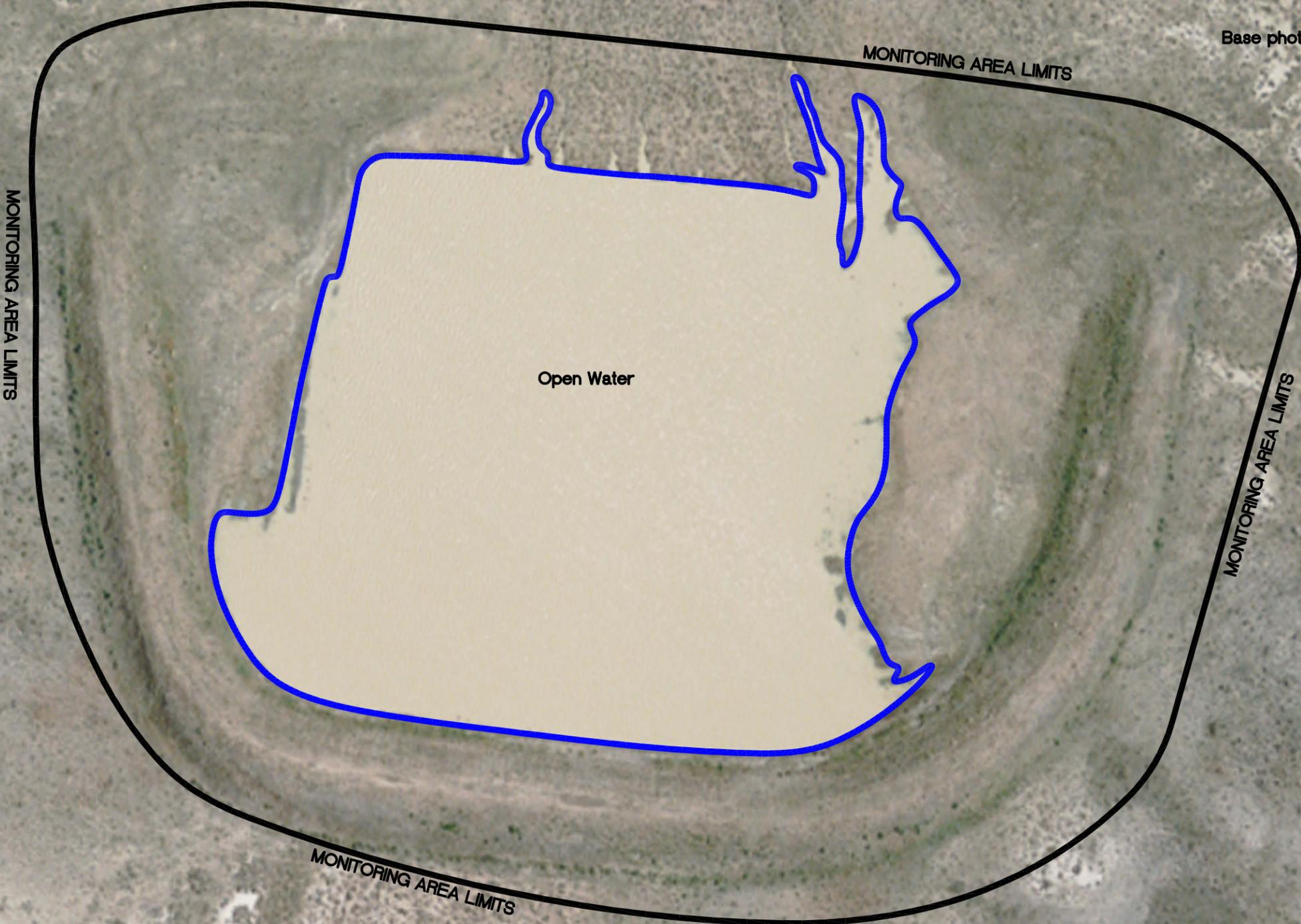


# Figure 3 Mapped Site Features 2006



- Legend**
- Monitoring Area Limits
  - Open Water Limits

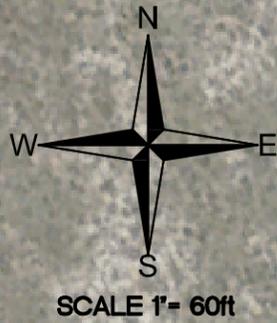
Base photograph July 5, 2006



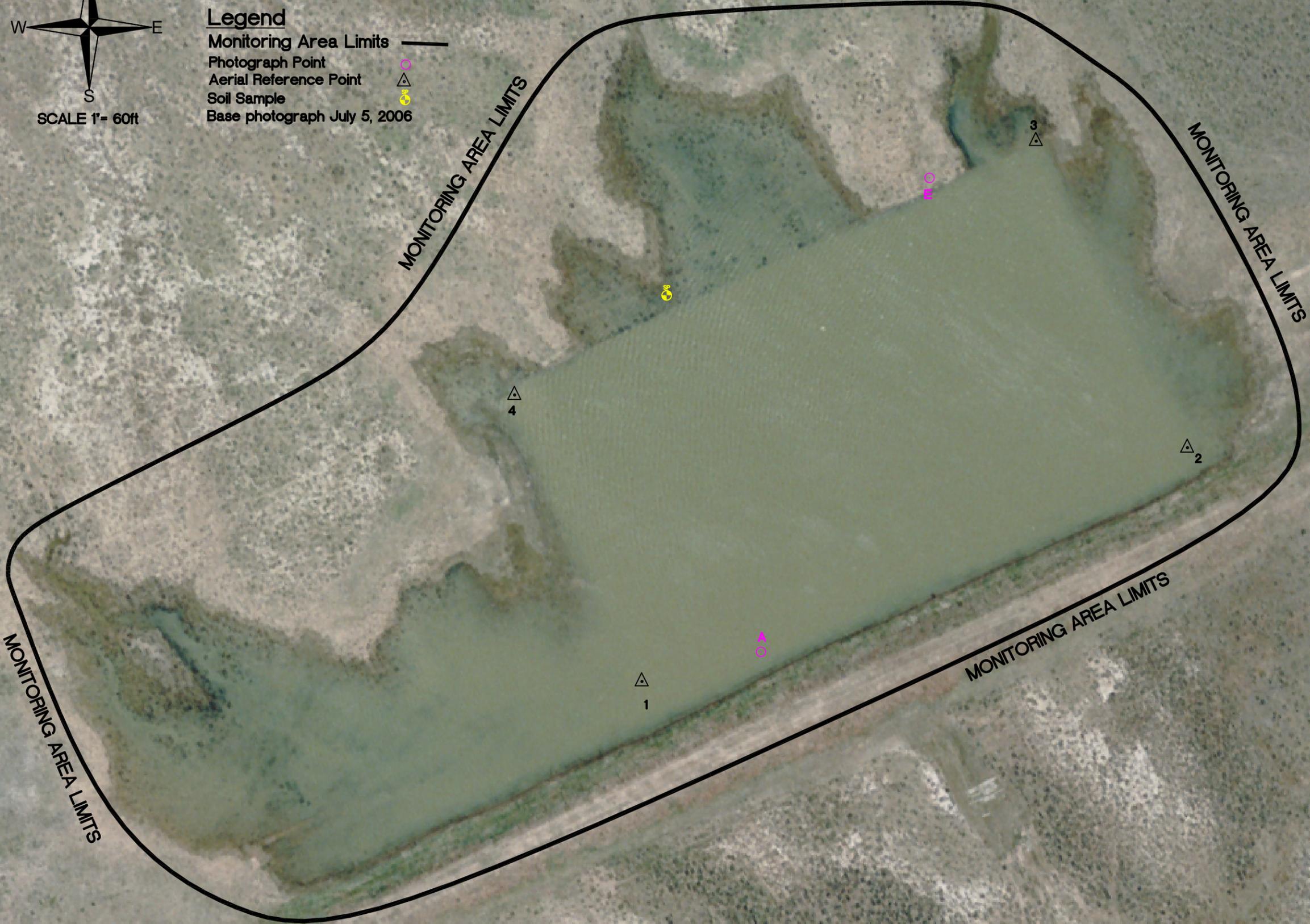
**WETLAND AREA**  
 Gross Wetland Area = 1.32 Acres  
 Open Water Area = 1.32 Acres  
 Net Wetland Area = 0.00 Acres

PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-14 WETLAND MITIGATION</b>	DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b>	PROJECT NO: B43054.00 0412W14 LOCATION: RIDGEWAY COMPLEX W-14 SCALE: 1" = 50' FILE NAME: 2006 W14BASE.dwg	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB APPVD: JB
		3810 Valley Commons Drive Suite 4 Bozeman, MT 59718	
FIGURE <span style="font-size: 2em; font-weight: bold;">3</span> OF		REV - Nov/28/2006	

# Figure 2 Monitoring Activity Locations 2006



- Legend**
- Monitoring Area Limits ———
  - Photograph Point ○
  - Aerial Reference Point △
  - Soil Sample ●
  - Base photograph July 5, 2006



PROJECT NAME		MDT RIDGEWAY COMPLEX W-15 WETLAND MITIGATION	
DRAWING TITLE		MONITORING ACTIVITY LOCATIONS 2006	
PROJ. NO:	B43054.00 0412W15	DRAWN:	SH/JR
LOCATION:	RIDGEWAY COMPLEX W-15	PROJ. MGR.:	J. BERGLUND
SCALE:	1" = 60'	CHECKED:	LB
FILE NAME:	2006 W15BASE.dwg	APPVD:	JB

3810 Valley Commons Drive  
Suite 4  
Bozeman, MT 59718



# Figure 3 Mapped Site Features 2006

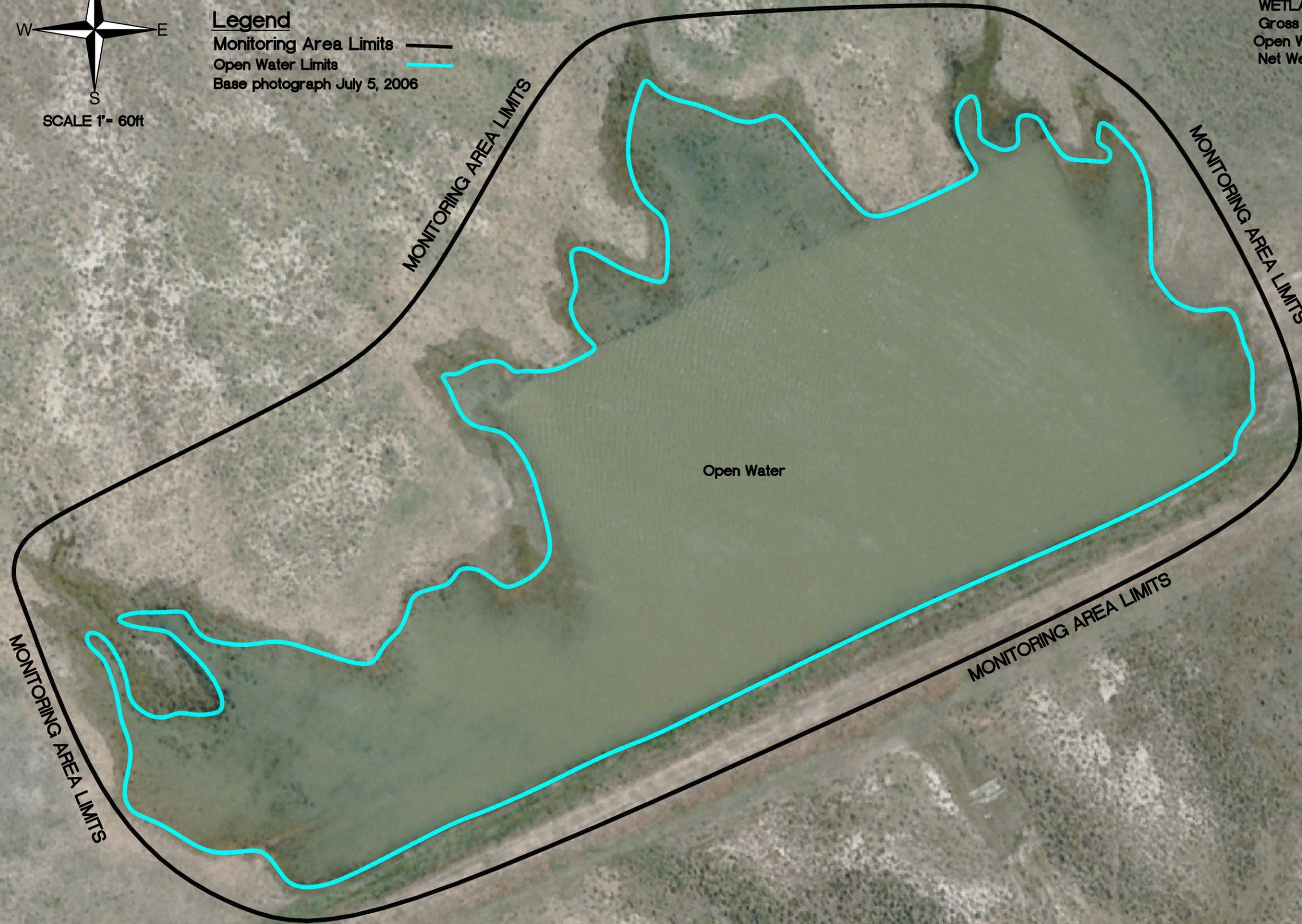


SCALE 1" = 60ft

### Legend

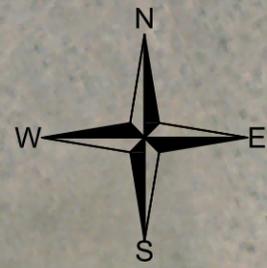
- Monitoring Area Limits
- Open Water Limits
- Base photograph July 5, 2006

WETLAND AREAS	
Gross Wetland Area	3.04 Acres
Open Water Area	3.04 Acres
Net Wetland Area	0.00 Acres



PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-15 WETLAND MITIGATION</b>	DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b>	PROJECT NO: B43054.00 0412W15 LOCATION: RIDGEWAY COMPLEX W-15 SCALE: 1" = 60'	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB APPVD: JB	FILE NAME: 2006 W15BASE.dwg
3810 Valley Commons Drive Suite 4 Bozeman, MT 59718				
FIGURE <b>3</b> OF REV - Nov/28/2006				

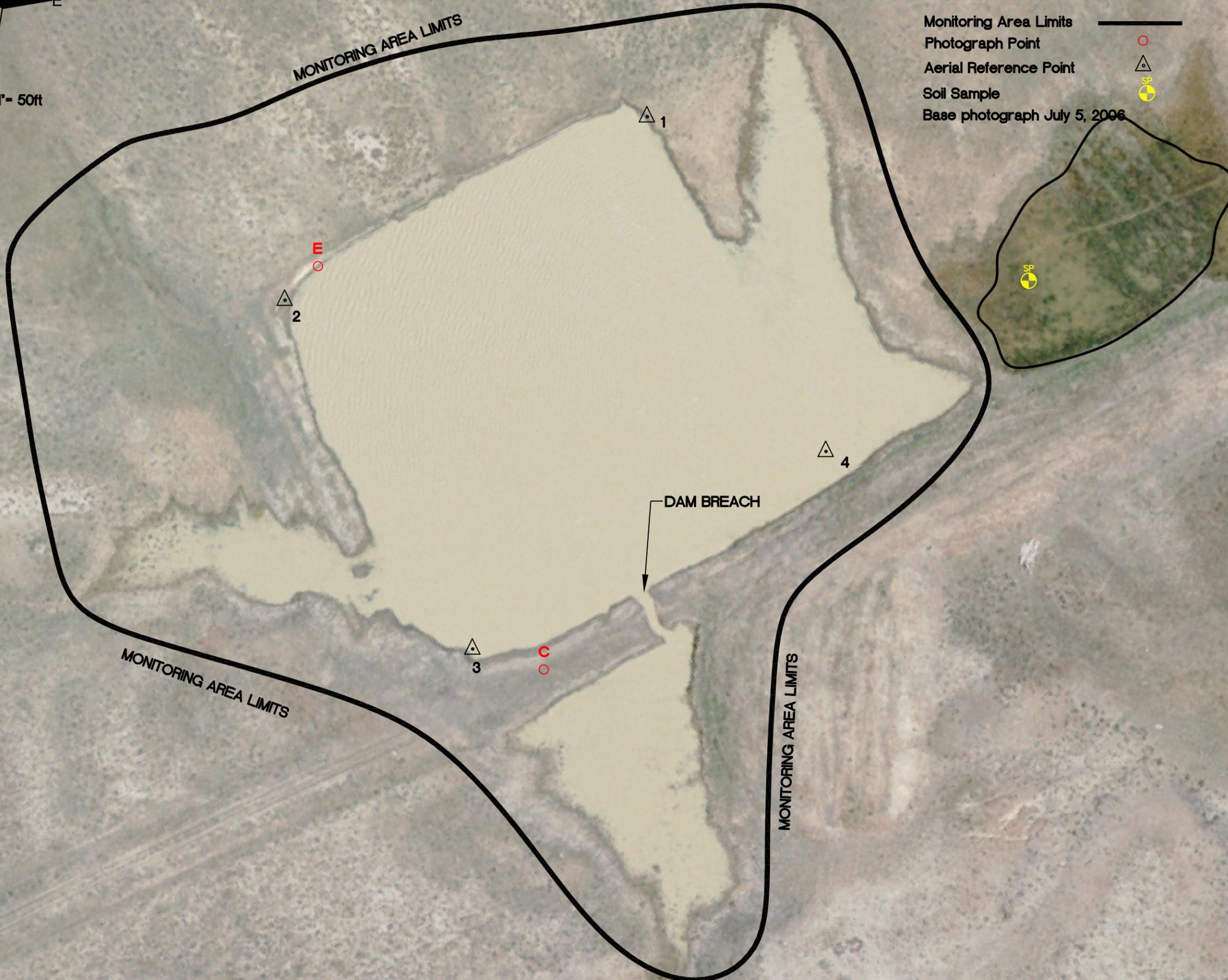
# Figure 2 Monitoring Activity Locations 2006



SCALE 1" = 50ft

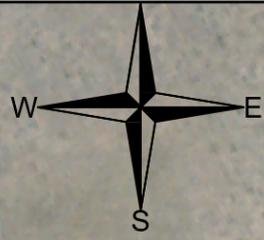
## Legend

- Monitoring Area Limits
- Photograph Point ○
- Aerial Reference Point △
- Soil Sample ⊙
- Base photograph July 5, 2006



PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-16 WETLAND MITIGATION</b>	DRAWING TITLE <b>MONITORING ACTIVITY LOCATIONS 2006</b>	PROJECT NO: B43054.00 0412W16 LOCATION: RIDGEWAY COMPLEX W-16 SCALE: 1" = 50' FILE NAME: 2006 W16BASE.dwg	DRAWN: SH/JR PROJ MGR: J. BERGLUND CHECKED: LB APPVD: JB
3810 Valley Commons Drive Suite 4 Bozeman, MT 59718			
FIGURE <span style="font-size: 2em; font-weight: bold;">2</span> OF .OF		REV - Nov/03/2006	

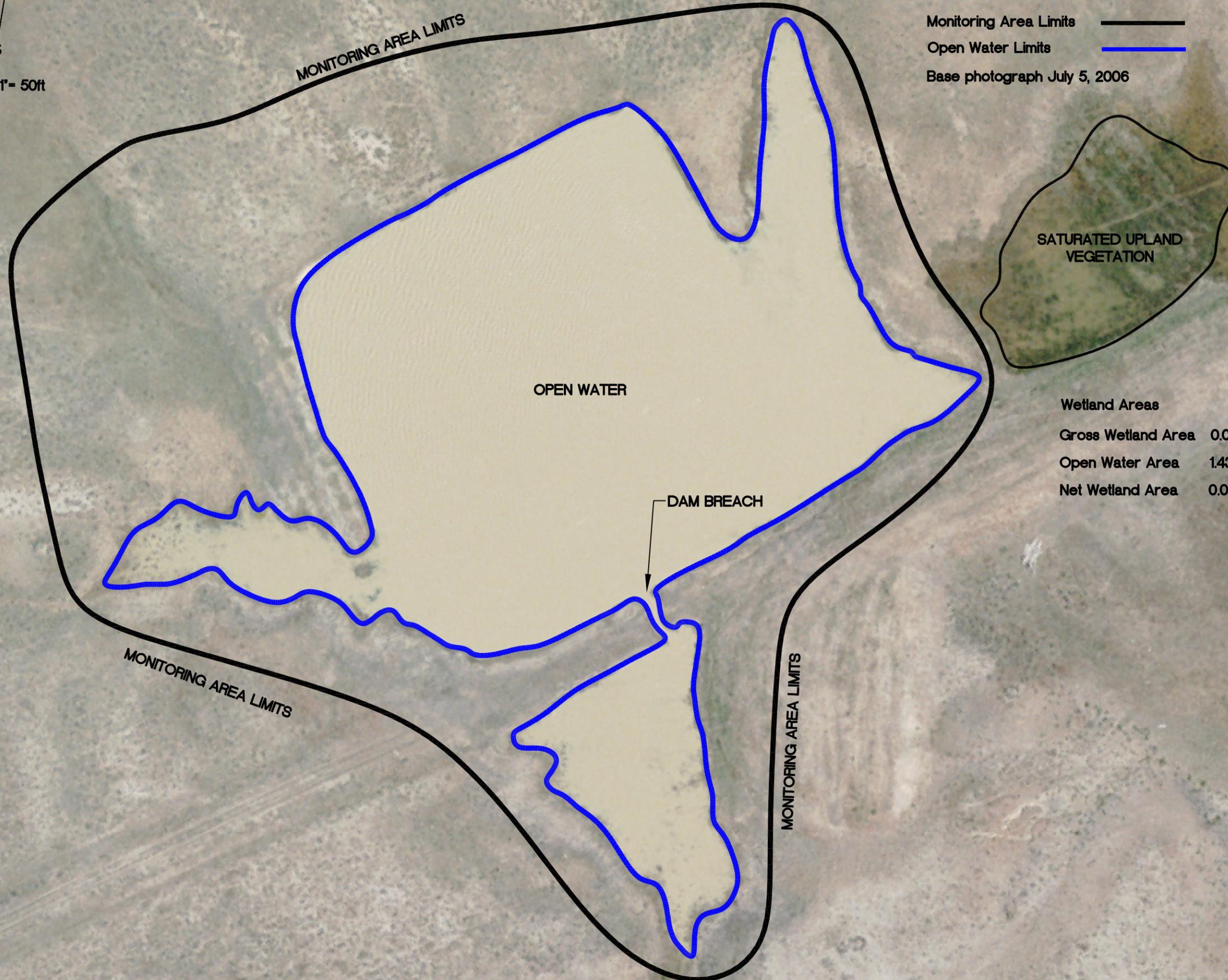
# Figure 3 Mapped Site Features 2006



SCALE 1" = 50ft

### Legend

- Monitoring Area Limits
- Open Water Limits
- Base photograph July 5, 2006



**Wetland Areas**

Gross Wetland Area	0.00 Acres
Open Water Area	1.43 Acres
Net Wetland Area	0.00 Acres

<p>PROJECT NAME <b>MDT RIDGEWAY COMPLEX W-16 WETLAND MITIGATION</b></p> <p>DRAWING TITLE <b>MAPPED SITE FEATURES 2006</b></p>	<p>PROJECT NO: B43054.00 0412W16</p> <p>LOCATION: RIDGEWAY COMPLEX W-16</p> <p>SCALE: 1" = 50'</p> <p>FILE NAME: 2006 W16BASE.dwg</p>	<p>DRAWN: SH/JR</p> <p>PROJ MGR: J. BERGLUND</p> <p>CHECKED: LB</p> <p>APPVD: JB</p>
<p>3810 Valley Commons Drive Suite 4 Bozeman, MT 59718</p>		
<p>FIGURE <b>3</b> OF REV - Oct/27/2006</p>		

## **Appendix H**

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**WETLANDS 1 - 8 AND 10 - 16:  
2006 COE WETLAND DELINEATION DATA FORMS  
2006 FUNCTIONAL ASSESSMENT FORMS**

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*MDT Wetland Mitigation Monitoring  
Ridgeway Wetland Complex  
Ekalaka, Montana*



**SOILS**

Map Unit Name		Bickerdyke Clay (87A)		Drainage Class: <u>well</u>	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		<u>Udorthentic Chromusterts</u>		Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	2.5 Y 4/2	7.5YR 3/4	Ig/dist	silt clay
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<u>X</u>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland?	<u>X</u>	Yes	<input type="checkbox"/>	No
Wetland Hydrology Present?	<u>X</u>	Yes	<input type="checkbox"/>	No		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Hydric Soils Present?	<u>X</u>	Yes	<input type="checkbox"/>	No		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
<b>Remarks:</b>									
Wetland edge inundated, though ELEPAL somewhat sparse, it is equally dispersed around rim of pond. As water level decreases throughout the summer wetland vegetation coverage will likely increase.									









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

Project/Site: <u>Ridgeway Complex</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Lynn Bacon, PBSJ</u>	Date: <u>7/19/06</u> County: <u>Carter</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>Emergent</u> Transect ID: _____ Plot ID: <u>W-4</u>

**VEGETATION**

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	SAGCUN	H	OBL	9			
2	ELEACI	H	OBL	10			
3	ELEPAL	H	OBL	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=100%

Wetland veg community expanded since 2005.

**HYDROLOGY**

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: <u>NA</u> (in.)  Depth to Free Water in Pit: <u>NA</u> (in.)  Depth to Saturated Soil: <u>0"</u> (in.)	
Remarks:  Wetland and pond areas inundated.	

**SOILS**

Map Unit Name		Bickerdyke Clay (87A)		Drainage Class: <u>well</u>	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		<u>Udorthentic Chromusterts</u>		Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	2.5Y 4/1,4/2			silt clay
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<u>X</u>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland?	<u>X</u>	Yes	<input type="checkbox"/>	No
Wetland Hydrology Present?	<u>X</u>	Yes	<input type="checkbox"/>	No					
Hydric Soils Present?	<u>X</u>	Yes	<input type="checkbox"/>	No					
Remarks:									
Wetland inundated beyond emergent fringe; likely vegetation will increase throughout summer and into 2007.									

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

Project/Site: <u>Ridgeway Complex</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Lynn Bacon, Land &amp; Water Consulting/PBSJ</u>	Date: <u>7/19/06</u> County: <u>Carter</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>Emergent</u> Transect ID: _____ Plot ID: <u>W-5</u>

**VEGETATION**

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	ELEPAL	H	OBL	9			
2	SAGCUN	H	OBL	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-).      2/2=100%

Wetland vegetation has expanded since 2005.

**HYDROLOGY**

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: <u>NA</u> (in.)  Depth to Free Water in Pit: <u>NA</u> (in.)  Depth to Saturated Soil: <u>0"</u> (in.)	
Remarks:  Wetland and pond inundated.	





**SOILS**

Map Unit Name		Bickerdyke Clay (87A)		Drainage Class: <u>well</u>	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		<u>Udorthentic Chromusterts</u>		Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	2.5 Y 4/1,4/2			silt clay
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<u>X</u>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland?	<u>X</u>	Yes	<input type="checkbox"/>	No
Wetland Hydrology Present?	<u>X</u>	Yes	<input type="checkbox"/>	No		<u>      </u>	Yes	<input type="checkbox"/>	No
Hydric Soils Present?	<u>X</u>	Yes	<input type="checkbox"/>	No		<u>      </u>	Yes	<input type="checkbox"/>	No
<b>Remarks:</b>									
Wetland-6 has been a positive growth wetland since monitoring began in 2001. This year, vegetation edges appeared to have expanded again, pushing outward and expanding into the open water.									



**SOILS**

Map Unit Name		Bickerdyke Clay (87A)		Drainage Class: <u>well</u>	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		<u>Udorthentic Chromusterts</u>		Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	2.5YR 4/2	10YR 4/6	mod/faint	silt clay
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			

**WETLAND DETERMINATION**

<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;">Hydrophytic Vegetation Present?</td> <td style="width:10%; text-align: center;"><u>X</u></td> <td style="width:10%; text-align: center;">Yes</td> <td style="width:10%; text-align: center;"><input type="checkbox"/></td> <td style="width:10%; text-align: center;">No</td> </tr> <tr> <td>Wetland Hydrology Present?</td> <td style="text-align: center;"><u>X</u></td> <td style="text-align: center;">Yes</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">No</td> </tr> <tr> <td>Hydric Soils Present?</td> <td style="text-align: center;"><u>X</u></td> <td style="text-align: center;">Yes</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">No</td> </tr> </table>	Hydrophytic Vegetation Present?	<u>X</u>	Yes	<input type="checkbox"/>	No	Wetland Hydrology Present?	<u>X</u>	Yes	<input type="checkbox"/>	No	Hydric Soils Present?	<u>X</u>	Yes	<input type="checkbox"/>	No	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:70%;">Is this Sampling Point Within a Wetland?</td> <td style="width:10%; text-align: center;"><u>X</u></td> <td style="width:10%; text-align: center;">Yes</td> <td style="width:10%; text-align: center;"><input type="checkbox"/></td> <td style="width:10%; text-align: center;">No</td> </tr> </table>	Is this Sampling Point Within a Wetland?	<u>X</u>	Yes	<input type="checkbox"/>	No
Hydrophytic Vegetation Present?	<u>X</u>	Yes	<input type="checkbox"/>	No																	
Wetland Hydrology Present?	<u>X</u>	Yes	<input type="checkbox"/>	No																	
Hydric Soils Present?	<u>X</u>	Yes	<input type="checkbox"/>	No																	
Is this Sampling Point Within a Wetland?	<u>X</u>	Yes	<input type="checkbox"/>	No																	
<p>Remarks:</p> <p>Wetland vegetation expanded since 2005 as hydrology has expanded. At time of investigation, W-7 and 8 and wetland between form one very large complex joined together by inundation of entire expanse between and including W-7 and 8.</p>																					







**SOILS**

Map Unit Name		Bickerdyke Clay (87A)		Drainage Class: <u>well</u>	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):		<u>Udorthentic Chromusterts</u>		Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	2.5Y 4/1	10YR 4/6	Prom/mod	silt clay
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<u>X</u>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland?	<u>X</u>	Yes	<input type="checkbox"/>	No
Wetland Hydrology Present?	<u>X</u>	Yes	<input type="checkbox"/>	No		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Hydric Soils Present?	<u>X</u>	Yes	<input type="checkbox"/>	No		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
<b>Remarks:</b>									
Wetland edges have greatly expanded since 2005 as a result of increase in inundation/saturation line.									

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

Project/Site: <u>Ridgeway Complex</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Lynn Bacon, Land &amp; Water Consulting/PBSJ</u>	Date: <u>7/19/06</u> County: <u>Carter</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>Emergent</u> Transect ID: _____ Plot ID: <u>W-11</u>

**VEGETATION**

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

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-).      1/1=100%

Hordeum from 2005 is likely inundated, ELEPAL expanding yet <<30% coverage around pond circumference. Small wetland area near berm.

**HYDROLOGY**

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input checked="" type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: <u>NA</u> (in.)  Depth to Free Water in Pit: <u>NA</u> (in.)  Depth to Saturated Soil: <u>0"</u> (in.)	
Remarks:  Pit is inundated to outer edges, in 2005 pit was dry. Wetland close to berm is saturated to surface.	

**SOILS**

Map Unit Name		Marvan Silty Clay		Drainage Class: <u>well</u>	
(Series and Phase):				Field Observations	
Taxonomy (Subgroup):				Confirm Mapped Type? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	10YR2/1			silt clay
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			
Oxidized root channels observed.					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	<u>X</u>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland?	<u>X</u>	Yes	<input type="checkbox"/>	No
Wetland Hydrology Present?	<u>X</u>	Yes	<input type="checkbox"/>	No					
Hydric Soils Present?	<u>X</u>	Yes	<input type="checkbox"/>	No					
Remarks:									
Not enough wetland vegetation around circumference of pond to qualify as wetland community. However, a smaller wetland is developing near berm (where SP was established). The total inundation of W-11 at this time of year may encourage proliferation of the vegetation community that has begun to grow.									

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

Project/Site: <u>Ridgeway Complex</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Lynn Bacon, Land &amp; Water Consulting/PBSJ</u>	Date: <u>7/19/06</u> County: <u>Carter</u> State: <u>MT</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>Emergent</u> Transect ID: _____ Plot ID: <u>W-12</u>

**VEGETATION**

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	ELEACI	H	OBL	9			
2	ELEPAL	H	OBL	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-).      2/2=100%

Wetland vegetation expanding to northwest and up drainage.

**HYDROLOGY**

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: <u>NA</u> (in.)  Depth to Free Water in Pit: <u>NA</u> (in.)  Depth to Saturated Soil: <u>0"</u> (in.)	
Remarks:  Inundation level expanded since 2005, as is the case with almost all Ridgeway wetlands in 2006.	





**SOILS**

Map Unit Name		Vaeda silty clay loam		Drainage Class: _____	
(Series and Phase):		_____		Field Observations	
Taxonomy (Subgroup):		_____		Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	2.5Y 4/1, 4/2			silt clay
<b>Hydric Soil Indicators:</b>					
_____ Histosol		_____ Concretions		_____ High Organic Content in surface Layer in Sandy Soils	
_____ Histic Epipedon		_____ Sulfidic Odor		_____ Organic Streaking in Sandy Soils	
_____ Aquic Moisture Regime		_____ Reducing Conditions		_____ Listed on Local Hydric Soils List	
_____ Gleyed or Low-Chroma Colors		_____ Other (Explain in Remarks)		_____ Listed on National Hydric Soils List	
<input checked="" type="checkbox"/>					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?	X	Yes	No	Is this Sampling Point Within a Wetland?	X	Yes	No
Wetland Hydrology Present?	<u>X</u>	Yes	No		<u>      </u>	<u>      </u>	<u>      </u>
Hydric Soils Present?	X	Yes	No		<u>      </u>	<u>      </u>	<u>      </u>
<b>Remarks:</b>							
Wetland inundation and vegetation coverage expanded since 2005.							

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

Project/Site: <u>Ridgeway Complex</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Lynn Bacon, Land &amp; Water Consulting/PBSJ</u>	Date: <u>7/19/06</u> County: <u>Carter</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>Upland</u> Transect ID: _____ Plot ID: <u>W-14</u>

**VEGETATION**

#	Dominant Plant Species	Stratum	Indicator	#	Dominant Plant Species	Stratum	Indicator
1	AGRSMI	H	FACU	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=0%

Any wetland vegetation in this wetland last year is currently inundated and not visible. AGRSMI is visible and partially under water.

**HYDROLOGY**

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: <u>0"</u> (in.)  Depth to Free Water in Pit: <u>NA</u> (in.)  Depth to Saturated Soil: <u>NA</u> (in.)	
Remarks:  Pit inundated, edges saturated.	





**SOILS**

Map Unit Name		Vaeda silty clay loam		Drainage Class: _____	
(Series and Phase):		_____		Field Observations	
Taxonomy (Subgroup):		_____		Confirm Mapped Type? _____ Yes <u>X</u> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	2.5Y 4/2, 4/1	7.5YR 4/6		silt clay
<b>Hydric Soil Indicators:</b>					
_____ Histosol		_____ Concretions		_____ High Organic Content in surface Layer in Sandy Soils	
_____ Histic Epipedon		_____ Organic Streaking in Sandy Soils		_____ Listed on Local Hydric Soils List	
_____ Sulfidic Odor		_____ Listed on National Hydric Soils List		_____ Other (Explain in Remarks)	
_____ Aquic Moisture Regime		_____			
_____ Reducing Conditions					
<u>X</u> Gleyed or Low-Chroma Colors					

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present?                      Yes <u>X</u> No Wetland Hydrology Present? <u>X</u> Yes    _____    No Hydric Soils Present? <u>X</u> Yes    _____    No	Is this Sampling Point Within a Wetland?        _____    Yes <u>X</u> No
Remarks:  Does not qualify as a wetland, but encouraging given the inundation level at the time of the investigation. Vegetation that was present in 2005 will likely expand as the water recedes.	



**SOILS**

Map Unit Name		Vaeda silty clay loam		Drainage Class: _____	
(Series and Phase):		_____		Field Observations	
Taxonomy (Subgroup):		_____		Confirm Mapped Type?    ___ Yes <u>X</u> No	
<b>Profile Description:</b>					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10"	A	2.5Y 4/2	7.5YR 4/6	Prom/com	silt/clay
<b>Hydric Soil Indicators:</b>					
_____ Histosol		_____ Concretions		_____ High Organic Content in surface Layer in Sandy Soils	
_____ Histic Epipedon		_____ Organic Streaking in Sandy Soils		_____ Listed on Local Hydric Soils List	
_____ Sulfidic Odor		_____ Listed on National Hydric Soils List		_____ Other (Explain in Remarks)	
_____ Aquic Moisture Regime		_____			
_____ Reducing Conditions		_____			
_____ Gleyed or Low-Chroma Colors		_____			
Not a hydric soil.					

**WETLAND DETERMINATION**

<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:60%;">Hydrophytic Vegetation Present?</td> <td style="width:10%; text-align: center;">Yes</td> <td style="width:10%; text-align: center;"><u>X</u></td> <td style="width:10%; text-align: center;">No</td> </tr> <tr> <td>Wetland Hydrology Present?</td> <td style="text-align: center;"><u>X</u></td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">_____ No</td> </tr> <tr> <td>Hydric Soils Present?</td> <td style="text-align: center;"><u>X</u></td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">_____ No</td> </tr> <tr> <td> </td> <td style="text-align: center;">_____</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">_____ No</td> </tr> </table>	Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	Wetland Hydrology Present?	<u>X</u>	Yes	_____ No	Hydric Soils Present?	<u>X</u>	Yes	_____ No		_____	Yes	_____ No	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:60%;">Is this Sampling Point Within a Wetland?</td> <td style="width:10%; text-align: center;">Yes</td> <td style="width:10%; text-align: center;"><u>X</u></td> <td style="width:10%; text-align: center;">No</td> </tr> <tr> <td> </td> <td style="text-align: center;">_____</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">_____ No</td> </tr> </table>	Is this Sampling Point Within a Wetland?	Yes	<u>X</u>	No		_____	Yes	_____ No
Hydrophytic Vegetation Present?	Yes	<u>X</u>	No																						
Wetland Hydrology Present?	<u>X</u>	Yes	_____ No																						
Hydric Soils Present?	<u>X</u>	Yes	_____ No																						
	_____	Yes	_____ No																						
Is this Sampling Point Within a Wetland?	Yes	<u>X</u>	No																						
	_____	Yes	_____ No																						
<b>Remarks:</b>  Wetland vegetation has not colonized this site. As high water levels recede, ELEPAL will likely increase coverage.																									



**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.): R. pipiens observed.

**14C. General Wildlife Habitat Rating**

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

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

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

**Low** (based on any of the following)

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

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

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

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

Structural Diversity (from #13)	<input type="checkbox"/> High								<input checked="" type="checkbox"/> Moderate								<input type="checkbox"/> Low			
	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input checked="" type="checkbox"/> Uneven				<input type="checkbox"/> Even			
Class Cover Distribution (all vegetated classes)																				
Duration of Surface Water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
<b>Low</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	E	--	--	--	--	--	--	--
<b>Moderate</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>High</b> 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)	<b>Wildlife Habitat Features Rating from 14C(ii)</b>			
	<input checked="" type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	--	--
Moderate	.9 (H)	--	--	--
Low	--	--	--	--

Comments: \_\_\_\_\_

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

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

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

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

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

ii. **Modified Habitat Quality:** Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity or is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support?

Y  N If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating:  E  H  M  L

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

Types of Fish Known or Suspected Within AA	Modified Habitat Quality from 14D(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: \_\_\_\_\_

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

Applies only to wetlands subject to flooding via in-channel or overbank flow.

If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

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

Estimated wetland area in AA subject to periodic flooding	<input type="checkbox"/> ≥ 10 acres			<input checked="" type="checkbox"/> <10, >2 acres			<input type="checkbox"/> ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains <b>no outlet or restricted outlet</b>	--	--	--	--	--	.5 (M)	--	--	--
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--	--

ii. **Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA?** (check)

Y  N Comments: \_\_\_\_\_

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

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.

If no wetlands in the AA are subject to flooding or ponding, check NA above.

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

Abbreviations: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input type="checkbox"/> >5 acre feet			<input checked="" type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	--	--	--	--	--	--	--	--	--
Wetlands in AA flood or pond < 5 out of 10 years	--	--	--	.7 (M)	--	--	--	--	--

Comments: \_\_\_\_\_

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

Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.

If no wetlands in the AA are subject to such input, check NA above.

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

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

Comments: \_\_\_\_\_

**14H. SEDIMENT/Shoreline Stabilization**  NA (proceed to 14I)

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

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

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	<input checked="" type="checkbox"/> Permanent / Perennial	<input type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	1 (H)	--	--
35-64 %	--	--	--
< 35 %	--	--	--

Comments:

**14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT**

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

A	<input type="checkbox"/> Vegetated component >5 acres						<input checked="" type="checkbox"/> Vegetated component 1-5 acres						<input type="checkbox"/> Vegetated component <1 acre					
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input checked="" type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
P/P	--	--	--	--	--	--	--	--	--	.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: Has ponded water all year.

**14K. UNIQUENESS**

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

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
Estimated Relative Abundance from #11									
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments:

**14L. RECREATION / EDUCATION POTENTIAL**

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

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

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

- Yes [Proceed to 14L (ii) and then 14L(iv).]
- No [Rate as low in 14L(iv)]

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

Ownership	Disturbance at AA from #12(i)	
	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Moderate <input type="checkbox"/> High
Public ownership	1 (H)	--
Private ownership	--	--

Comments: \_\_\_\_\_

## 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	0.9	1	
D. General Fish/Aquatic Habitat	NA		--	
E. Flood Attenuation	M	0.50	1	
F. Short and Long Term Surface Water Storage	M	0.70	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	0.40	1	
L. Recreation/Education Potential	H	1.00	1	
<b>Totals:</b>		8.20	11.00	140
<b>Percent of Total Possible Points:</b>			<b>75%</b> (Actual / Possible) x 100 [rd to nearest whole #]	

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

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

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



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

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

- Primary or Critical habitat (list species)  D  S
- Secondary habitat (list species)  D  S
- Incidental habitat (list species)  D  S
- No usable habitat  D  S

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point and Rating	---	---	---	---	---	---	0 (L)

If documented, list the source (e.g., observations, records, etc.): \_\_\_\_\_

**14B. HABITAT FOR PLANTS AND ANIMALS RATED AS S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM.**

**Do not include species listed in 14A(i).**

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

- Primary or Critical habitat (list species)  D  S Rana pipiens
- Secondary habitat (list species)  D  S \_\_\_\_\_
- Incidental habitat (list species)  D  S \_\_\_\_\_
- No usable habitat  D  S \_\_\_\_\_

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

Highest Habitat Level:	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point and Rating	1 (H)	---	---	---	---	---	---

If documented, list the source (e.g., observations, records, etc.): R. pipiens observed.

**14C. General Wildlife Habitat Rating**

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

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

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

**Low** (based on any of the following)

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

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

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

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

Structural Diversity (from #13)	<input type="checkbox"/> High								<input checked="" type="checkbox"/> Moderate								<input type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input checked="" type="checkbox"/> Uneven				<input type="checkbox"/> Even			
Duration of Surface Water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
<b>Low</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	E	--	--	--	--	--	--	--
<b>Moderate</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>High</b> 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)	<b>Wildlife Habitat Features Rating from 14C(ii)</b>			
	<input checked="" type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	--	--
Moderate	.9 (H)	--	--	--
Low	--	--	--	--

Comments: \_\_\_\_\_

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

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

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

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

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

ii. **Modified Habitat Quality:** Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity or is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support?

Y  N If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating:  E  H  M  L

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

Types of Fish Known or Suspected Within AA	Modified Habitat Quality from 14D(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: \_\_\_\_\_

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

Applies only to wetlands subject to flooding via in-channel or overbank flow.

If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

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

Estimated wetland area in AA subject to periodic flooding	<input type="checkbox"/> ≥ 10 acres			<input type="checkbox"/> <10, >2 acres			<input checked="" type="checkbox"/> ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains <b>no outlet or restricted outlet</b>	--	--	--	--	--	--	--	--	.2 (L)
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--	--

ii. **Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA?** (check)

Y  N Comments: \_\_\_\_\_

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

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.

If no wetlands in the AA are subject to flooding or ponding, check NA above.

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

Abbreviations: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input type="checkbox"/> >5 acre feet			<input checked="" type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	--	--	--	--	--	--	--	--	--
Wetlands in AA flood or pond < 5 out of 10 years	--	--	--	.7 (M)	--	--	--	--	--

Comments: \_\_\_\_\_

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

Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.

If no wetlands in the AA are subject to such input, check NA above.

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

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
	<input type="checkbox"/> ≥ 70%		<input checked="" type="checkbox"/> < 70%		<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
% cover of wetland vegetation in AA	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Evidence of flooding or ponding in AA	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
AA contains <b>no or restricted outlet</b>	--	--	.7 (M)	--	--	--	--	--
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--

Comments: \_\_\_\_\_

**14H. SEDIMENT/Shoreline Stabilization**  NA (proceed to 14I)

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

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

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	<input checked="" type="checkbox"/> Permanent / Perennial	<input type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	.7 (M)	--	--
< 35 %	--	--	--

Comments:

**14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT**

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

A	<input type="checkbox"/> Vegetated component >5 acres						<input type="checkbox"/> Vegetated component 1-5 acres						<input checked="" type="checkbox"/> Vegetated component <1 acre						
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input checked="" type="checkbox"/> Moderate		<input type="checkbox"/> Low		
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> 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: Has ponded water all year.

**14K. UNIQUENESS**

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

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
Estimated Relative Abundance from #11									
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments:

**14L. RECREATION / EDUCATION POTENTIAL**

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

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

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

- Yes [Proceed to 14L (ii) and then 14L(iv).]
- No [Rate as low in 14L(iv)]

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

Ownership	Disturbance at AA from #12(i)		
	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High
Public ownership	1 (H)	--	--
Private ownership	--	--	--

Comments: \_\_\_\_\_

## 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	0.9	1	
D. General Fish/Aquatic Habitat	NA		--	
E. Flood Attenuation	L	0.20	1	
F. Short and Long Term Surface Water Storage	M	0.70	1	
G. Sediment/Nutrient/Toxicant Removal	M	0.70	1	
H. Sediment/Shoreline Stabilization	M	0.70	1	
I. Production Export/Food Chain Support	M	0.4	1	
J. Groundwater Discharge/Recharge	H	1.00	1	
K. Uniqueness	M	0.40	1	
L. Recreation/Education Potential	H	1.00	1	
<b>Totals:</b>		7.00	11.00	5
<b>Percent of Total Possible Points:</b>			<b>64%</b> (Actual / Possible) x 100 [rd to nearest whole #]	

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

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

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



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

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

- Primary or Critical habitat (list species)  D  S
- Secondary habitat (list species)  D  S
- Incidental habitat (list species)  D  S
- No usable habitat  D  S

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point and Rating	---	---	---	---	---	---	0 (L)

If documented, list the source (e.g., observations, records, etc.): \_\_\_\_\_

**14B. HABITAT FOR PLANTS AND ANIMALS RATED AS S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM.**

**Do not include species listed in 14A(i).**

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

- Primary or Critical habitat (list species)  D  S Rana pipiens
- Secondary habitat (list species)  D  S \_\_\_\_\_
- Incidental habitat (list species)  D  S \_\_\_\_\_
- No usable habitat  D  S \_\_\_\_\_

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

Highest Habitat Level:	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	none
Functional Point and Rating	1 (H)	---	---	---	---	---	---

If documented, list the source (e.g., observations, records, etc.): R. pipiens observed.

**14C. General Wildlife Habitat Rating**

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

- Substantial** (based on any of the following)
  - observations of abundant wildlife #s or high species diversity (during any period)
  - abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
  - presence of extremely limiting habitat features not available in the surrounding area
  - interviews with local biologists with knowledge of the AA
- Low** (based on any of the following)
  - few or no wildlife observations during peak use periods
  - little to no wildlife sign
  - sparse adjacent upland food sources
  - interviews with local biologists with knowledge of AA
- Moderate** (based on any of the following)
  - observations of scattered wildlife groups or individuals or relatively few species during peak periods
  - common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
  - adequate adjacent upland food sources
  - interviews with local biologists with knowledge of the AA

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

Structural Diversity (from #13)	<input type="checkbox"/> High								<input type="checkbox"/> Moderate								<input checked="" type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input checked="" type="checkbox"/> Even			
Duration of Surface Water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
<b>Low</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	H	--	--
<b>Moderate</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>High</b> 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)	<b>Wildlife Habitat Features Rating from 14C(ii)</b>			
	<input type="checkbox"/> Exceptional	<input checked="" type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	--	--
Moderate	--	--	--	--
Low	--	.4 (M)	--	--

Comments: Pond full in 2006, dry in 2005.

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

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

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

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

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

ii. **Modified Habitat Quality:** Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity or is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support?

Y  N If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating:  E  H  M  L

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

Types of Fish Known or Suspected Within AA	Modified Habitat Quality from 14D(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: \_\_\_\_\_

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

Applies only to wetlands subject to flooding via in-channel or overbank flow.

If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

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

Estimated wetland area in AA subject to periodic flooding	<input type="checkbox"/> ≥ 10 acres			<input type="checkbox"/> <10, >2 acres			<input checked="" type="checkbox"/> ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains <b>no outlet or restricted outlet</b>	--	--	--	--	--	--	--	--	.2 (L)
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--	--

ii. **Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA?** (check)

Y  N Comments: \_\_\_\_\_

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

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.

If no wetlands in the AA are subject to flooding or ponding, check NA above.

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

Abbreviations: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input type="checkbox"/> >5 acre feet			<input checked="" type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	--	--	--	--	--	--	--	--	--
Wetlands in AA flood or pond < 5 out of 10 years	--	--	--	--	.5 (M)	--	--	--	--

Comments: \_\_\_\_\_

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

Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.

If no wetlands in the AA are subject to such input, check NA above.

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

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
	<input type="checkbox"/> ≥ 70%		<input checked="" type="checkbox"/> < 70%		<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
% cover of wetland vegetation in AA	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Evidence of flooding or ponding in AA	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
AA contains <b>no or restricted outlet</b>	--	--	.7 (M)	--	--	--	--	--
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--

Comments: \_\_\_\_\_

**14H. SEDIMENT/Shoreline Stabilization**  NA (proceed to 14I)

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

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

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	<input type="checkbox"/> Permanent / Perennial	<input checked="" type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	--	--	--
< 35 %	--	.2 (L)	--

Comments:

**14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT**

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

A	<input type="checkbox"/> Vegetated component >5 acres						<input type="checkbox"/> Vegetated component 1-5 acres						<input checked="" type="checkbox"/> Vegetated component <1 acre					
B	<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input checked="" type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.2L
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	--
No Discharge/Recharge indicators present	--
Available Discharge/Recharge information inadequate to rate AA D/R potential	N/A (Unknown)

Comments: Unknown.

**14K. UNIQUENESS**

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

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
Estimated Relative Abundance from #11	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments:

**14L. RECREATION / EDUCATION POTENTIAL**

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

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

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

- Yes [Proceed to 14L (ii) and then 14L(iv).]
- No [Rate as low in 14L(iv)]

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

Ownership	Disturbance at AA from #12(i)		
	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High
Public ownership	--	--	--
Private ownership	--	--	--

Comments: L 0.1

**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	M	0.40	1	
D. General Fish/Aquatic Habitat	NA		--	
E. Flood Attenuation	L	0.20	1	
F. Short and Long Term Surface Water Storage	M	0.50	1	
G. Sediment/Nutrient/Toxicant Removal	M	0.70	1	
H. Sediment/Shoreline Stabilization	L	0.2	1	
I. Production Export/Food Chain Support	L	0.20	1	
J. Groundwater Discharge/Recharge	NA		--	
K. Uniqueness	M	0.40	1	
L. Recreation/Education Potential	L	0.10	1	
<b>Totals:</b>		3.70	10.00	3
<b>Percent of Total Possible Points:</b>			<b>37%</b> (Actual / Possible) x 100 [rd to nearest whole #]	

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



**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.): R. pipiens observed.

**14C. General Wildlife Habitat Rating**

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

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

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

**Low** (based on any of the following)

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

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

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

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

Structural Diversity (from #13)	<input type="checkbox"/> High								<input checked="" type="checkbox"/> Moderate								<input type="checkbox"/> Low			
Class Cover Distribution (all vegetated classes)	<input type="checkbox"/> Even				<input type="checkbox"/> Uneven				<input type="checkbox"/> Even				<input checked="" type="checkbox"/> Uneven				<input type="checkbox"/> Even			
Duration of Surface Water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
<b>Low</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	E	--	--	--	--	--	--	--
<b>Moderate</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>High</b> disturbance at AA (see #12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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

Evidence of Wildlife Use from 14C(i)	Wildlife Habitat Features Rating from 14C(ii)			
	<input checked="" type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	1 (E)	--	--	--
Moderate	--	--	--	--
Low	--	--	--	--

Comments: \_\_\_\_\_

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

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

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

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

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

ii. **Modified Habitat Quality:** Is fish use of the AA precluded or significantly reduced by a culvert, dike, other man-made structure or activity or is the waterbody included on the 'MDEQ list of waterbodies in need of TMDL development' with 'Probable Impaired Uses' listed as cold or warm water fishery or aquatic life support?

Y  N If yes, reduce the rating from 14D(i) by one level and check the modified habitat quality rating:  E  H  M  L

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

Types of Fish Known or Suspected Within AA	Modified Habitat Quality from 14D(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	--	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: \_\_\_\_\_

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

Applies only to wetlands subject to flooding via in-channel or overbank flow.

If wetlands in AA do not flooded from in-channel or overbank flow, check NA above.

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

Estimated wetland area in AA subject to periodic flooding	<input type="checkbox"/> ≥ 10 acres			<input checked="" type="checkbox"/> <10, >2 acres			<input type="checkbox"/> ≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains <b>no outlet or restricted outlet</b>	--	--	--	--	--	.5 (M)	--	--	--
AA contains <b>unrestricted outlet</b>	--	--	--	--	--	--	--	--	--

ii. **Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA?** (check)

Y  N Comments: \_\_\_\_\_

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

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.

If no wetlands in the AA are subject to flooding or ponding, check NA above.

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

Abbreviations: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral.

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input checked="" type="checkbox"/> >5 acre feet			<input type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	1 (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.			
	<input checked="" type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%		<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
% cover of wetland vegetation in AA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Evidence of flooding or ponding in AA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
AA contains <b>no or restricted outlet</b>	1 (H)		--		--		--	
AA contains <b>unrestricted outlet</b>	--		--		--		--	

Comments: \_\_\_\_\_

**14H. SEDIMENT/Shoreline Stabilization**  NA (proceed to 14I)

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

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

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	<input checked="" type="checkbox"/> Permanent / Perennial	<input type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	1 (H)	--	--
35-64 %	--	--	--
< 35 %	--	--	--

Comments:

**14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT**

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

A	<input checked="" type="checkbox"/> Vegetated component >5 acres						<input type="checkbox"/> Vegetated component 1-5 acres						<input type="checkbox"/> Vegetated component <1 acre					
B	<input type="checkbox"/> High		<input checked="" type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low	
C	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N
P/P	--	--	--	.8H	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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: Has ponded water all year.

**14K. UNIQUENESS**

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

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
Estimated Relative Abundance from #11	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
Low disturbance at AA (#12i)	--	--	--	--	--	--	--	.4M	--
Moderate disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (#12i)	--	--	--	--	--	--	--	--	--

Comments:

**14L. RECREATION / EDUCATION POTENTIAL**

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

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

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

- Yes [Proceed to 14L (ii) and then 14L(iv).]
- No [Rate as low in 14L(iv)]

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

Ownership	Disturbance at AA from #12(i)	
	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> High
Public ownership	1 (H)	--
Private ownership	--	--

Comments: \_\_\_\_\_

**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	1.00	1	
D. General Fish/Aquatic Habitat	NA		--	
E. Flood Attenuation	M	0.50	1	
F. Short and Long Term Surface Water Storage	H	1.00	1	
G. Sediment/Nutrient/Toxicant Removal	H	1.00	1	
H. Sediment/Shoreline Stabilization	H	1.00	1	
I. Production Export/Food Chain Support	H	0.80	1	
J. Groundwater Discharge/Recharge	H	1.00	1	
K. Uniqueness	M	0.40	1	
L. Recreation/Education Potential	H	1.00	1	
<b>Totals:</b>		8.70	11.00	263
<b>Percent of Total Possible Points:</b>			<b>79%</b> (Actual / Possible) x 100 [rd to nearest whole #]	

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

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

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

## **Appendix I**

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### **WETLANDS 1 - 8 AND 10 – 16: 2006 REPRESENTATIVE PHOTOGRAPHS**

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*MDT Wetland Mitigation Monitoring  
Ridgeway Wetland Complex  
Ekalaka, Montana*

**RIDGEWAY COMPLEX WETLAND 1 TO 8 AND 10 TO 16  
2006 PHOTOGRAPH LOG**

Wetland #	Photo Location	Photograph Description	Compass Reading
1	D	wetland view	234
1	A	wetland view	162
2	A	panoramic wetland view	48
2	B	panoramic wetland view	20
2	C	panoramic wetland view	342
3	A	wetland view	320
3	B	wetland view	58
4	B	wetland view	16
4	A	wetland view	230
5	A	wetland view	244
5	B	wetland view	50
6	A	wetland view	288
6	B	wetland view	28
7	F	wetland view	168
7	E	wetland view	54
8	A	wetland view	116
8	B	wetland view	160
10	F	wetland view	126
10	A	wetland view	0
11	D	wetland view	288
11	F	wetland view	100
12	A	wetland view	38
12	D	wetland view	270
13	D	wetland view	120
13	A	wetland view	0
14	E	wetland view	180
14	A	wetland view	326
15	E	wetland view	216
15	A	wetland view	38
16	C	wetland view	270
16	E	wetland view	90

## 2006 Ridgeway Complex Wetland Mitigation Site



**WL#: 1 Location: D Description: Wetland view**  
**Compass Reading: 234°**



**WL#: 1 Location: A Description: Wetland view**  
**Compass Reading: 162°**



**WL#: 2 Location: A Description: Panoramic wetland**  
**view Compass Reading: 48°**



**WL#: 2 Location: B Description: Panoramic wetland**  
**view Compass Reading: 20°**



**WL#: 2 Location: C Description: Panoramic wetland**  
**view Compass Reading: 342°**

## 2006 Ridgeway Complex Wetland Mitigation Site



**WL#: 3 Location: A Description: Wetland view**  
**Compass Reading: 320°**



**WL#: 3 Location: B Description: Wetland view**  
**Compass Reading: 58°**



**WL#: 4 Location: A Description: Wetland view**  
**Compass Reading: 230°**



**WL#: 4 Location: B Description: Wetland view**  
**Compass Reading: 16°**



**WL#: 5 Location: A Description: Wetland view,**  
**Dale Tribby, BLM, identifying bird species. Compass**  
**Reading: 244°**



**WL#: 5 Location: B Description: Wetland view**  
**Compass Reading: 50°**

## 2006 Ridgeway Complex Wetland Mitigation Site



**WL#: 6 Location: A Description:** Wetland view  
**Compass Reading:** 288°



**WL#: 6 Location: B Description:** Wetland view, buffer  
in foreground **Compass Reading:** 28°



**WL#: 7 Location: F Description:** Wetland view  
**Compass Reading:** 168°



**WL#: 7 Location: E Description:** Wetland view  
**Compass Reading:** 54° in foreground



**WL#: 8 Location: A Description:** Wetland view  
**Compass Reading:** 116°



**WL#: 8 Location: B Description:** Wetland view, buffer  
**Compass Reading:** 160°

## 2006 Ridgeway Complex Wetland Mitigation Site



**WL#: 10 Location: A Description: Wetland view  
Compass Reading: 0°**



**WL#: 10 Location: F Description: Wetland view, point  
shifted to west because of inundation Original  
Compass Reading: 126°**



**WL#: 11 Location: D Description: Wetland view  
Compass Reading: 288°**



**WL#: 11 Location: F Description: Wetland view  
Compass Reading: 100°**



**WL#: 12 Location: A Description: Wetland view  
Compass Reading: 38°**



**WL#: 12 Location: D Description: Wetland view  
Compass Reading: 270°**

## 2006 Ridgeway Complex Wetland Mitigation Site



**WL#: 13 Location: A Description: Wetland view**  
**Compass Reading: 120°**



**WL#: 13 Location: D Description: Wetland view**  
**Compass Reading: 0°**



**WL#: 14 Location: A Description: Wetland view**  
**Compass Reading: 326°**



**WL#: 14 Location: E Description: Wetland view**  
**Compass Reading: 180°**



**WL#: 15 Location: A Description: Wetland view**  
**Compass Reading: 38°**



**WL#: 15 Location: E Description: Wetland view**  
**Compass Reading: 216°**

## 2006 Ridgeway Complex Wetland Mitigation Site



**WL#: 16 Location: C Description: Wetland view  
Compass Reading: 270°**



**WL#: 16 Location: E Description: Wetland view  
Compass Reading: 90°**

## **Appendix J**

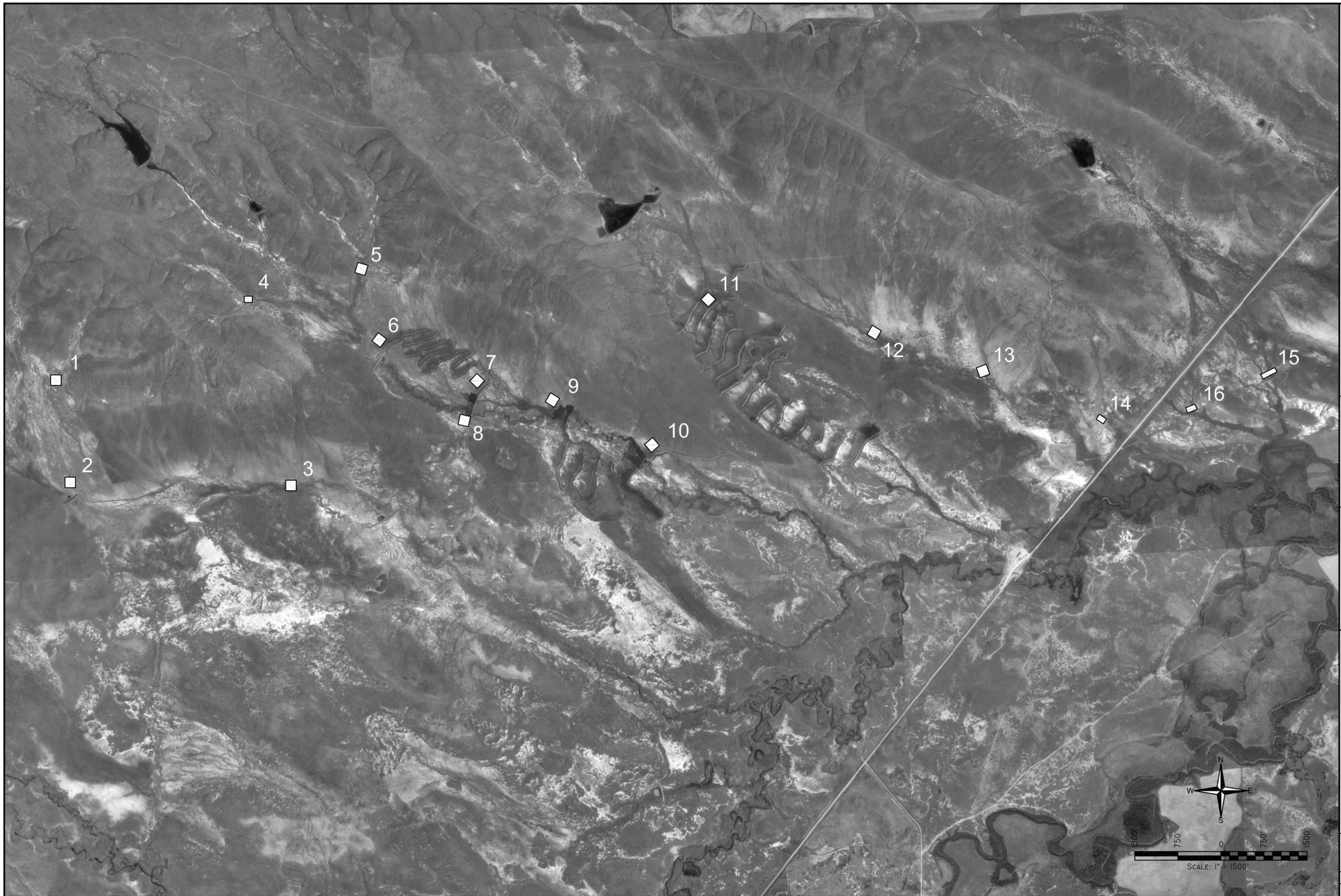
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**ALL WETLANDS:**

**FIGURE 4 - DIGITAL ORTHOPHOTO QUAD WETLAND  
LOCATIONS**

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*MDT Wetland Mitigation Monitoring  
Ridgeway Wetland Complex  
Ekalaka, Montana*



PROJECT NAME		MDT MITIGATION MONITORING	
DRAWING TITLE		DOQ WETLAND LOCATIONS	
PROJ NO:	330054,0412	DRAWN:	SH
FILE NAME:	Figure 4.dwg	CHECKED:	LB
SCALE:	1"=1500'	APPVD:	JB
LOCATION:	Ekalaka, MT	PROJ MGR:	J.Bergland
SHEET NUMBER		4 OF	
REV 02		DATE: 06/27/05	

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