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

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*Batavia  
Kalispell, Montana*



Prepared for:

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

Prepared by:

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

December 2005

Project No: B43054.00 - 104

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## 1.0 INTRODUCTION

The Batavia Waterfowl Production Area (WPA) mitigation project is located in Smith Valley, approximately 5 miles southwest of Kalispell in Watershed 4 (**Figure 1**). The general property location is within Township 28 North, Range 22 West, Sections 20 and 21, Flathead County.

The Batavia WPA mitigation project was developed to mitigate wetland impacts associated with Montana Department of Transportation (MDT) roadway projects that have been, or will be constructed in Watershed No. 4. Specifically, the mitigation pertains to impacts on the Missoula County Line North, Somers to Whitefish, Swan River Bridge, and future projects within the northern section of Missoula District.

The entire WPA is influenced by a high groundwater table and by surface water diverted out of nearby Ashley Creek. Over time, the existing dike structure and water delivery system became degraded to a point where the dike was no longer holding water at the desired elevation. The intent of the project was to raise the water level approximately 2 feet to increase the area of inundation. This was to be achieved by reconstructing the degraded dike system. Construction was completed in January 1998 with the goal of creating and enhancing wetlands. In addition to reconstructing the dike, several defunct culverts were removed, three new control devices were installed, and open water was restored in the vicinity of several small islands, essentially enhancing the site by creating habitat diversity.

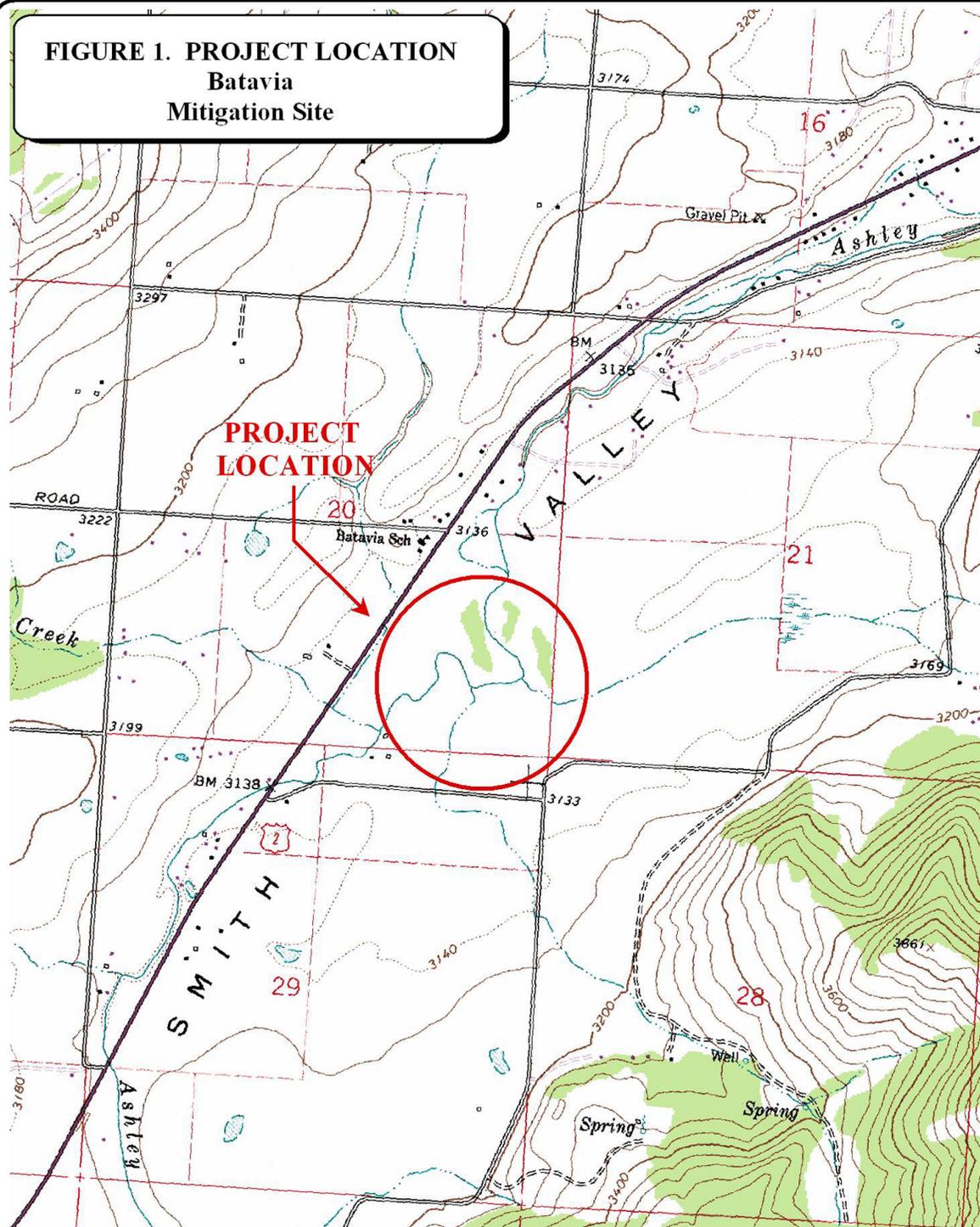
According to MDT project files, mitigation credits were determined by assigning credit ratios for creation and enhancement across the entire site. A total of 28.72 acres of credit was agreed upon by MDT, the USFWS, and Army Corps of Engineers (COE), with the potential for an additional 6.8 acres to be credited following post-project monitoring. Credits were broken down as follows:

Wetland Creation minus impacts from new dike:	18.2 acres credited at 2:1 =	9.10 acres
North Cell enhancement:	76.8 acres credited at 8:1 =	9.60 acres
South Cell enhancement:	60.0 acres credited at 6:1 =	<u>10.00 acres</u>
	Total =	28.72 acres

The WPA encompasses two primary hydrologic areas referred to as the North Cell (76.8 acres) and South Cell (60.3 acres). Due to the immense size of the WPA and the enormous effort required to monitor the entire site, three monitoring areas were selected by MDT to serve as representations of the larger site. The three monitoring areas are located: 1) at the southwest corner of the South Cell (Wetland D); 2) between the North Cell and South Cell on the western end (Wetlands B and C); and 3) on the northwest side of the North Cell (Wetland A) (**Figure 2** in **Appendix A**). Borrow material was removed from each of these areas for construction of the new dike and wetland creation was expected at each location.

Monitoring of this site between 2001 and 2004 revealed an overall lack of wetland establishment in the borrow areas due to lack of hydrology. In March of 2005, Ducks Unlimited lowered the four borrow areas through excavation to ensure inundation and future wetland establishment in these areas. The excavated material was deposited in the adjacent upland areas and seeded. A

**FIGURE 1. PROJECT LOCATION**  
**Batavia**  
**Mitigation Site**



PROJECT #: 130091.006  
 DATE: MAY 2001  
 LOCATION:  
 PROJECT MANAGER: B. DUTTON  
 DRAWN BY: B. NOECKER

**LAND & WATER CONSULTING, INC.**  
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site inspection of the project was conducted on May 18, 2005, with representatives from MDT, USFWS, COE, DU, and PBS&J in attendance. The site will continue to be monitored to document wetland establishment in these locations. Of note in 2005, was a change in monitoring limits at Wetland “A” to include new excavation in this area (**Figure 2 in Appendix A**).

## 2.0 METHODS

### 2.1 Monitoring Dates and Activities

The site was visited on May 18<sup>th</sup> (spring) and July 22<sup>nd</sup> (mid-season) 2005. The late-May to early-June period was selected for the spring visit because monitoring between mid-May and early June is likely to detect migrant as well as early nesting activities for a variety of avian species (Carlson pers. comm.), as well as maximizing the potential for amphibian detection. In Montana, most amphibian larval stages are present by early June (Werner pers. comm.).

The mid-season visit was conducted between mid-July and mid-August to document vegetation, soil, and hydrologic conditions. All of the information contained on the Wetland Mitigation Site Monitoring Form (**Appendix B**) was collected at Wetland D per the direction of MDT. Activities and information conducted/collected at Wetland D included: wetland delineation; wetland/open water boundary mapping; vegetation community mapping; vegetation transect; soils data; hydrology data; bird and general wildlife use; photograph points; functional assessment; and (non-engineering) examination of dike structures.

Wetlands A, B, and C were also visited in July and delineated based on vegetation, hydrology and soil characteristics; however, monitoring forms were not completed. This monitoring approach was established by MDT and Land & Water in August 2001 because it was determined that conducting the full assessment at Wetlands A, B, and C would not aid in determining wetland development across the entire WPA.

### 2.2 Hydrology

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

All additional hydrologic data were recorded on the mitigation site monitoring form (**Appendix B**). The boundary between wetlands and open water (no rooted vegetation) aquatic habitats was mapped on the aerial photograph and an estimate of the average water depth at this boundary was recorded. Groundwater located within 18 inches of the ground surface (soil pit depth for purposes of delineation), was documented on the wetland delineation form at each data point.

## 2.3 Vegetation

General dominant species-based vegetation community types (e.g., *Juncus balticus*/*Phalaris arundinacea*) were delineated on an aerial photograph during the mid-season visit. Standardized community mapping was not employed as many of these systems are geared towards climax vegetation and may not reflect yearly changes. Estimated percent cover of the dominant species in each community type was listed on the site monitoring form (**Appendix B**).

The 10-foot wide belt transect that was established in Wetland D during 2001 was partially located in the area excavated during March 2005 and some of the transect was converted to shallow open water that had not yet developed wetland vegetation at the time of the survey. The location of the transect is shown in **Figure 2 (Appendix A)**. The purpose of the transect is to evaluate changes over time, especially the establishment and increase of hydrophytic vegetation. The transect location was marked on the air photo and all data recorded on the mitigation site monitoring form. Transect endpoint locations were initially recorded in 2001 with the GPS unit.

A comprehensive plant species list for the site was first compiled in 2001 and has been updated with new species encountered. Ultimately, observations from past years will be compared with new data to document vegetation changes over time. Woody species were not planted at this mitigation site and therefore, monitoring relative to the survival of planted species was not conducted.

## 2.4 Soils

Soils were evaluated during the mid-season visit according to hydric soils determination procedures outlined in the COE 1987 Wetland Delineation Manual. Soil data were recorded for each wetland determination point on the COE Routine Wetland Delineation Data Form (**Appendix B**). The most current terminology used by NRCS was used to describe hydric soils (USDA 1998).

## 2.5 Wetland Delineation

Prior to initiating monitoring efforts at this site, it was agreed upon by MDT and Land & Water that a full wetland delineation of the entire WPA was not warranted at that time. Therefore, wetland delineation was conducted only at Wetlands A, B, C and D according to the 1987 COE Wetland Delineation Manual. Wetland and upland areas within the four monitoring areas were investigated for the presence of wetland hydrology, hydrophytic vegetation and hydric soils. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). The information was recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**). The wetland/upland boundary that was delineated on the air photo and recorded with a resource grade GPS unit in 2001 was checked again in 2005. The wetland/upland boundary in combination with the wetland/open water habitat boundary was used to calculate the developed wetland area.

## 2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations and other positive indicators of use, such as vocalizations, were recorded on the wetland monitoring form during each visit. Indirect use indicators, including tracks; scat; burrows; eggshells; skins; bones; etc., were also recorded. Observations were recorded as the observer traversed the site while conducting other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not implemented. A comprehensive list of observed species was compiled for comparison to previous monitoring events.

## 2.7 Birds

Bird observations were recorded during both the spring and summer monitoring visits. No formal census plots, spot mapping, point counts, or strip transects were conducted. During the mid-season visit, bird observations were recorded according to the established protocol while conducting the other monitoring activities and are shown in **Appendix D**. Observations were categorized by species, activity code, and general habitat association (see field and office data forms in **Appendix B**). Observations from past years are compared with new data.

## 2.8 Macroinvertebrates

Macroinvertebrate sampling was not conducted at the Batavia site per the request of MDT.

## 2.9 Functional Assessment

A functional assessment form was completed for all wetlands encompassed by the WPA using the 1999 MDT Montana Wetland Assessment Method (**Appendix B**). The entire site was included for functional assessment in order to compare with the pre-project functional assessment, which was completed using the 1996 MDT Montana Wetland Field Evaluation Form. Field data necessary for this assessment were generally collected during each mid-season site visit. The remainder of the functional assessment was completed in the office and is compared to the 1999 baseline functional assessment.

## 2.10 Photographs

Photographs were taken during the mid-season visit showing the current land use surrounding the site, the monitored area, and the vegetation transect. Each photo point location was recorded with a resource grade GPS in 2001, and are shown on **Figure 2** in **Appendix A**. All photographs were taken using a 50 mm lens. A description and compass direction for each photograph was recorded on the wetland monitoring form. Photo points were revisited in 2005 and seven new photo point locations were added in order to better document wetland establishment in the newly excavated areas.

## 2.11 GPS Data

During the 2001 monitoring season, survey points were collected with a resource grade GPS unit at the vegetation transect beginning and ending locations, and at all photograph locations. Wetland boundaries were also surveyed with a resource grade GPS unit. No new GPS data were collected during the 2005 monitoring year.

## 2.12 Maintenance Needs

The dike and water control structures were examined during each site visit for obvious signs of breaching, damage, or other problems. This did not constitute an engineering-level structural inspection, but rather a cursory examination.

## 3.0 RESULTS

### 3.1 Hydrology

The Batavia WPA is influenced by a high groundwater table and also receives water that is diverted out of Ashley Creek. Pre-project notes in MDT files indicate that maximum water levels prior to construction of the new dike occurred at 3126.2 feet elevation, with adjacent wetland habitat delineated up to elevation 3127. The newly proposed dike and water delivery system were designed to bring water levels within both the north and south cells to elevation 3128.5. The original delineation and pre-construction information is provided in the 2001 monitoring report prepared by Land & Water Consulting, Inc.

It appears as though the desired full pool elevation of 3128.5 has never been met at this site because the diversion structure is limited to a full pool elevation of 3126.6 (Urban pers. comm.). Water elevation was at 3126.6 during the mid-season visit in 2005. Drought conditions in the Flathead Valley are also having an influence on water levels at Batavia. According to the Western Regional Climate Center, Kalispell yearly precipitation totals for 2000 (10.5 inches), 2001 (12.47 inches), 2002 (12.92), 2003 (12.48), and 2004 (16.87 inches) were 67, 79, 82, 79, and 107 percent, respectively, of the total annual mean precipitation (15.75 inches) in this area. Precipitation totals for 2005 are not yet available. Lower than average groundwater levels and a diversion structure set two feet lower than the original proposal are thought to be the primary reasons for the site not reaching its full potential.

During close examination of the project site in 2004, DU determined that the four excavated areas being monitored were not originally excavated to the design elevation, thus preventing these areas from becoming saturated and developing wetland characteristics. Corrective measures were taken in the spring of 2005 as previously discussed. Each of the four excavated areas was inundated with water during the mid-season visit, with water depths ranging between one and 24 inches.

### 3.2 Vegetation

Vegetation species identified on the site within Wetland D are presented in **Table 1** and on the attached data form. Seven community types were identified and mapped on the mitigation area in 2005 which is the same as what was recorded in 2004, although with the new excavation, portions of some of these plant communities were converted to shallow open water (**Figure 3, Appendix A**). Community types included Type 1: *Agropyron smithii*/mixed grass upland; Type 2: *Hordeum jubatum*/*Eleocharis palustris*; Type 3: *Juncus balticus*/*Phalaris arundinacea*; Type 4: *Scirpus acutus*; Type 5: *Agropyron smithii*/*Potentilla anserina*; Type 6: *Ceratophyllum demersum*; and Type 7 *Eleocharis palustris*. Dominant species within each of these communities are listed on the attached data form (**Appendix B**).

**Table 1: 2001 - 2005 Batavia vegetation species list.**

Scientific Name	Region 9 (Northwest) Wetland Indicator
<i>Achillea millefolium</i>	FACU
<i>Agropyron smithii</i>	FACU
<i>Agropyron repens</i>	FACU
<i>Agrostis alba</i>	FAC
<i>Agrostis stolonifera</i>	FAC
<i>Alisma plantago-aquatica</i>	OBL
<i>Alopecurus pratensis</i>	FACW
<i>Antennaria spp.</i>	--
<i>Aster hesperius</i>	OBL
<i>Carex diandra</i>	OBL
<i>Carex parryana</i>	FAC+
<i>Carduus nutans</i>	(Status NX)
<i>Ceratophyllum demersum</i>	OBL
<i>Chenopodium album</i>	FAC
<i>Cirsium arvense</i>	FACU+
<i>Cirsium vulgare</i>	FACU
<i>Cynoglossum officinale</i>	FACU
<i>Deschampsia cespitosa</i>	FACW
<i>Distichlis stricta</i>	FAC+
<i>Eleocharis palustris</i>	OBL
<i>Elymus cinereus</i>	FAC
<i>Epilobium watsonii</i>	FACW
<i>Erigeron lonchophyllus</i>	FACW
<i>Gnaphalium palustre</i>	FAC+
<i>Hippuris vulgaris</i>	OBL
<i>Hordeum jubatum</i>	FAC
<i>Juncus balticus</i>	FACW+
<i>Juncus castaneus</i>	FACW
<i>Juncus nevadensis</i>	FACW
<i>Koeleria cristata</i>	--

**Table 1 (continued): 2001 - 2005 Batavia vegetation species list.**

Scientific Name	Region 9 (Northwest) Wetland Indicator
<i>Lotus corniculatus</i>	FAC
<i>Melilotus alba</i>	FACU
<i>Melilotus officinalis</i>	FACU
<i>Mentha arvensis</i>	FACW-
<i>Monolepis nuttalliana</i>	FAC-
<i>Muhlenbergia asperifolia</i>	FACW
<i>Phalaris arundinacea</i>	FACW
<i>Phleum pratense</i>	FAC-
<i>Poa juncifolia</i>	FACU+
<i>Poa pratensis</i>	FAC
<i>Polygonum amphibium</i>	OBL
<i>Polypogon monspeliensis</i>	FACW
<i>Potamogeton natans</i>	OBL
<i>Potentilla anserina</i>	OBL
<i>Puccinellia nuttalliana</i>	OBL
<i>Ranunculus cymbalaria</i>	OBL
<i>Rumex crispus</i>	FAC+
<i>Scirpus acutus</i>	OBL
<i>Sisymbrium altissimum</i>	--
<i>Sisyrinchium angustifolium</i>	FACW-
<i>Smilacina stellata</i>	--
<i>Spartina gracilis</i>	FACW
<i>Stachys palustris</i>	FACW+
<i>Taraxacum officinale</i>	FACU
<i>Tragopogon dubius</i>	--
<i>Triglochin maritimum</i>	OBL
<i>Typha latifolia</i>	OBL

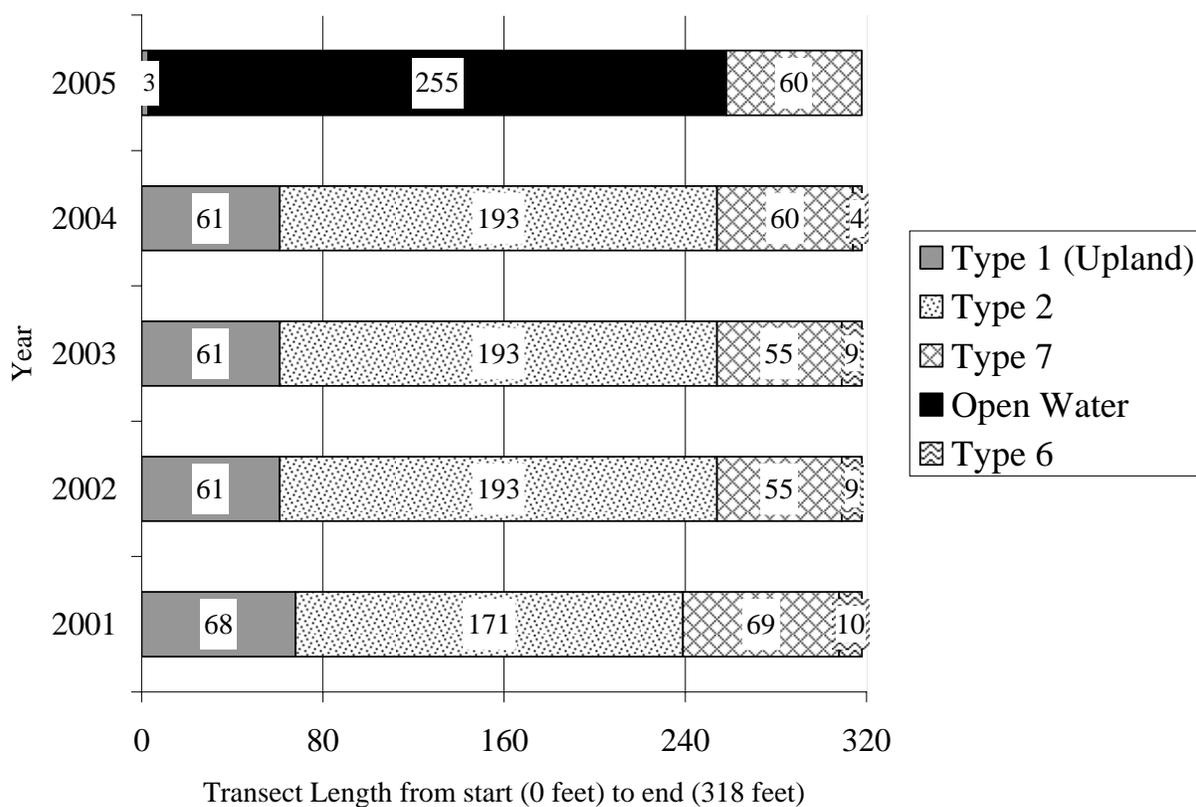
Type 1 consists of upland grasses dominated by *Agropyron smithii*, and accompanied by *Elymus cinereus*, *Koeleria cristata*, *Spartina gracilis*, and *Agropyron repens*. Type 2 consists primarily of *Hordeum jubatum*, *Eleocharis palustris* and *Puccinellia nuttalliana*. Type 3 consists of *Juncus balticus* and *Phalaris arundinacea*. Type 4 is dominated by *Scirpus acutus* and is present throughout the South Cell. Type 5 is a disturbed upland community present on the island, and is dominated by *Potentilla anserina*, *Agropyron smithii*, and bare ground. Type 6 is an aquatic community dominated by *Ceratophyllum demersum*. Type 7 is similar and occurs in close proximity to Type 2 except that *Eleocharis palustris* is dominant in this type instead of *Hordeum jubatum*, thus warranting a differentiation between the two types.

As previously discussed, much of the area within the established vegetation transect was converted from marginal wetland and upland habitat to shallow open water in 2005 after excavation of this area took place. Vegetation had not yet begun to develop, but likely will in the future as the water is generally less than 24 inches. The results are detailed in the attached data form (**Appendix B**), and are summarized in **Table 2** and **Charts 1** and **2**.

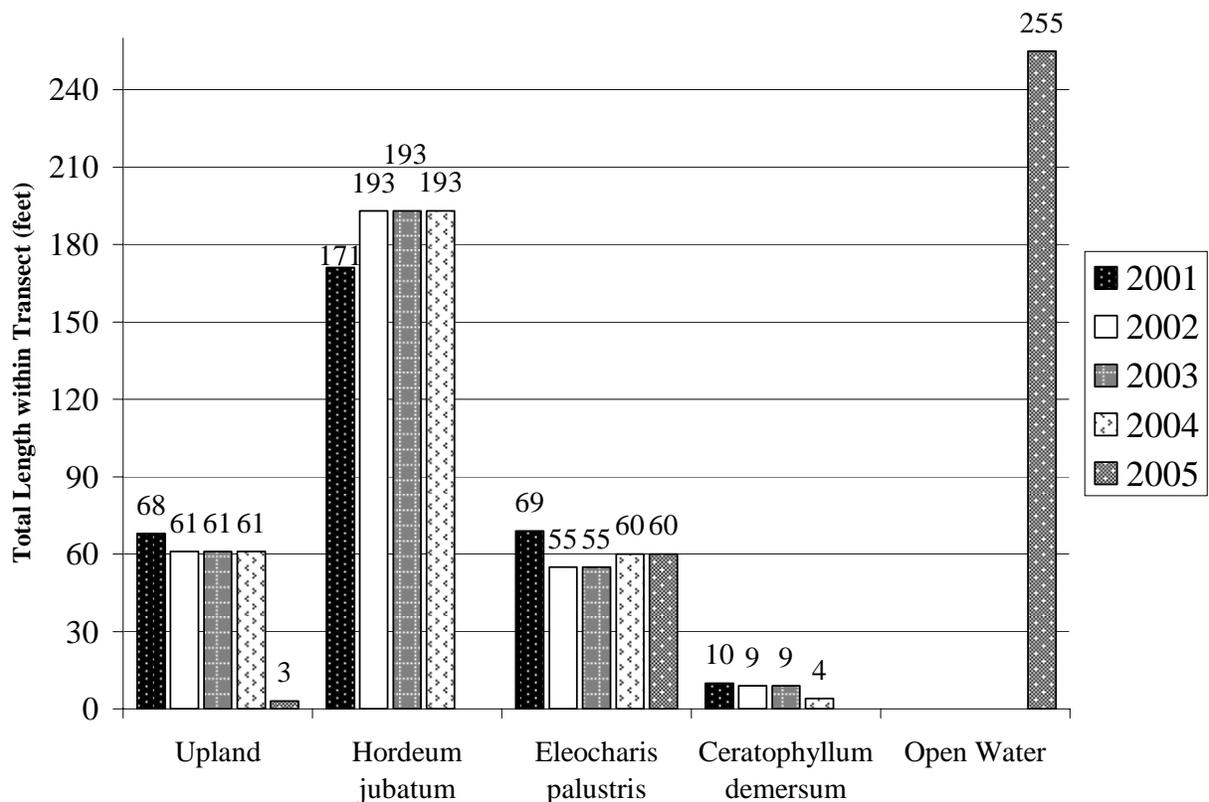
**Table 2: Vegetation transect data summary.**

Monitoring Year	2001	2002	2003	2004	2005
Transect Length (feet)	318	318	318	318	318
# Vegetation Community Transitions along Transect	4	4	4	4	2
# Vegetation Communities along Transect	4	4	4	4	2
# Hydrophytic Vegetation Communities along Transect	3	3	3	3	1
Total Vegetative Species	29	22	22	22	4
Total Hydrophytic Species	21	13	13	13	1
Total Upland Species	8	9	9	9	3
Estimated % Total Vegetative Cover	75	75	75	75	20
% Transect Length Comprised of Hydrophytic Vegetation Communities	79	81	81	81	19
% Transect Length Comprised of Upland Vegetation Communities	21	19	19	19	1
% Transect Length Comprised of Unvegetated Open Water	0	0	0	0	80
% Transect Length Comprised of Bare Substrate	0	0	0	0	0

**Chart 1: Transect maps showing vegetation types from start of transect (0 feet) to the end of transect (318 feet) during each year monitored.**



**Chart 2: Length of vegetation communities within Transect 1 for each year monitored.**



### 3.3 Soils

According to the Upper Flathead Valley Area soil survey (Soil Conservation Service 1960), soils in the mitigation site are classified as Muck and Peat. The mapping unit consists of mosses, rushes, grasses, sedges, cattails, trees and other woody vegetation in various stages of decomposition. Organic accumulations typically range from one-foot to four-feet thick. The soil remains moist or saturated most or all of the year unless artificially drained.

The muck and peat characteristics described above were present in the main cells but were not found within the monitoring areas. During the first four years of monitoring, three test pits (TP) were excavated along the vegetation transect and described using the COE routine wetland determination forms. During 2005, the upper 12 – 36 inches of soil was removed from two of the three test pit locations to allow for inundation in these areas. Soil characteristics were not examined at the test pit locations in 2005 as each was inundated with at least 12 inches of standing water and one location with 24 inches of water. Though difficult to accomplish, an attempt will be made in 2006 to characterize the soil along the vegetation transect. As an alternative this year, soils were sampled in undisturbed upland and wetland habitat within the Wetland “D” monitoring area. As expected, soil characteristics were similar to those previously recorded along the transect and are documented on the COE forms in **Appendix B**.

### 3.4 Wetland Delineation

As discussed in the Methods Section of this report, wetland delineation was not completed for the entire WPA, but rather focused on the four borrow areas where wetland creation was anticipated. Delineated wetland boundaries are illustrated on **Figure 3**. Completed wetland delineation forms are included in **Appendix B**. Soils, vegetation, and hydrology are discussed in preceding sections. The delineated areas are similar to those observed in 2004, with the exception of those area affected by the excavation. In some instances, wetland was (at least temporarily) converted to open water as a result of the excavation.

In order to determine the acreage of wetland creation in the three monitoring areas, the original pre-project wetland delineation was overlaid onto the 2005 delineation for direct comparison. When comparing the preconstruction delineation to current conditions, delineation boundaries at Wetland A were nearly identical, with a very slight gain of 0.06 acre. It should be noted that this is likely attributed to mapping/scale error, and is not the result of wetland expansion in the area. Further comparison of the pre and post-project delineations show a gain of 0.50 acre at Wetland B, 0.35 acre at Wetland C, and 0.34 acre at Wetland D. Total wetland creation for the four wetlands is 1.25 acres. New in 2005 is the shallow open water acreage that was created through excavation. The open water area at Wetland A was 2.06 acres, 0.52 acres at Wetland B, 0.94 at Wetland C, and 1.41 acres at Wetland D for a total open water area of 4.93 acres. Combined aquatic habitat creation for the four areas is 6.18 acres. Future monitoring will determine if the shallow open water areas convert to wetland.

The original goal of the project was to create approximately three acres of wetland in the borrow areas and 5.9 acres up to the designed full pool elevation in the north and south cells combined. It was also anticipated that an additional 13.6 acres of wetland would develop beyond the full pool elevation through capillary action in the soil. When added together, a gross total of 22.5 acres of creation was expected across the site. Subtract from this the 4.3 acres of impact from the new dike structure and the net wetland gain was to be 18.2 acres. A full delineation of the north and south cells would need to be conducted in order to determine if the anticipated periphery wetlands have developed.

In addition to the wetland creation, the project was also intended to enhance existing wetlands for wildlife habitat and species diversification. Several of the existing islands were enlarged and the open water component surrounding them increased also to improve waterfowl breeding and nesting success on the site. It was also anticipated that the improved water delivery and retention on the site would result in minor changes in plant community composition away from monotypic stands of reed canary grass, cattail, and bulrush that dominate the site. With monitoring activities focused on the three borrow areas, it is difficult to quantify enhancements that have occurred across the entire site; however, with ten different species of breeding and/or nesting waterfowl and numerous other bird species documented at Batavia since the inception of monitoring, it would appear that wetland enhancements have been successful.

### 3.5 Wildlife

Wildlife species, or evidence of wildlife, observed on the site during 2005 monitoring efforts are listed in **Table 3**. Specific evidence observed, as well as activity codes pertaining to birds, is provided on the completed monitoring form in **Appendix B**. Five mammals, one reptile, and numerous bird species have been noted using the mitigation site. Observations in 2005 were similar to previous years. Of interest in 2005 was the return of Black Terns to the Batavia WPA. This species of concern was documented pre-project, but had been absent since monitoring began.

### 3.6 Macroinvertebrates

Macroinvertebrate sampling was not conducted at the Batavia site per the direction of MDT.

### 3.7 Functional Assessment

The completed functional assessment form is presented in **Appendix B**. Functional assessment results are summarized in **Table 4**. In order to compare pre and post project functional assessment, the entire site was considered including the active Ashley Creek channel. Although direct comparisons cannot be made between the two assessments because different versions of the form were used, general comparisons can be made. A comparison of the two assessments shows similarities, although the most recent functional assessment produced higher ratings based on MNHP species habitat (Forster's [past USFWS observations] and black terns [2005 observations]), groundwater discharge/recharge, and recreation/education potential. The original functional assessment rated the wetland as a Category II with 65% of possible points, while the current assessment rated the wetland as a Category II with 80% of possible points. This assessment is unchanged from 2004.

When baseline functional scores are compared to post-project functional scores, the site appears to have changed little since completion of the project. This is, in part, due to the application of differing pre- and post-project functional assessment methods and the assignment of very high scores for most functions in the baseline condition. Once a site rates the highest possible score for a given function, it is difficult to document further functional improvement. For example, enhancement activities were carried out on the project, including the excavation of numerous small open water areas interspersed throughout the marsh. While the excavation of these areas has increased habitat diversity at the site, functional assessment has not been able to quantify these enhancements because the site was (correctly) assigned the highest possible score for wildlife habitat (1.0), using the 1996 functional assessment form, prior to onset of this activity.

**Table 3: Fish and wildlife species observed at the Batavia Mitigation Site 2001-2005.**

FISH, AMPHIBIANS, AND REPTILES	
<b>Western Terrestrial Garter Snake (<i>Thamnophis elegans</i>)</b>	
<b>BIRDS</b>	
<b>American Coot (<i>Fulica americana</i>)</b>	<b>Killdeer (<i>Charadrius vociferous</i>)</b>
<b>American Crow (<i>Corvus brachyrhynchos</i>)</b>	<b>Lesser Scaup (<i>Aythya affinis</i>)</b>
American Robin ( <i>Turdus migratorius</i> )	<b>Mallard (<i>Anas platyrhynchos</i>)</b>
<b>American Wigeon (<i>Anas americana</i>)</b>	<b>Northern Harrier (<i>Circus cyaneus</i>)</b>
<b>Black Tern (<i>Chlidonias niger</i>)</b>	<b>Northern Shoveler (<i>Anas clypeata</i>)</b>
<b>Blue-winged Teal (<i>Anas discors</i>)</b>	Osprey ( <i>Pandion haliaetus</i> )
<b>Canada Goose (<i>Branta canadensis</i>)</b>	<b>Redhead (<i>Aythya americana</i>)</b>
<b>Cinnamon Teal (<i>Anas cyanoptera</i>)</b>	<b>Red-winged Blackbird (<i>Agelaius phoeniceus</i>)</b>
<b>Cliff Swallow (<i>Petrochelidon pyrrhonota</i>)</b>	<b>Ring-necked Duck (<i>Aythya collaris</i>)</b>
Common Goldeneye ( <i>Bucephala clangula</i> )	<b>Rock Dove (<i>Columba livia</i>)</b>
<b>Common Raven (<i>Corvus corax</i>)</b>	<b>Sandhill Crane (<i>Grus canadensis</i>)</b>
<b>Common Snipe (<i>Gallinago gallinago</i>)</b>	Song Sparrow ( <i>Melospiza melodia</i> )
Gray Partridge ( <i>Perdix perdix</i> )	<b>Sora (<i>Porzana Carolina</i>)</b>
<b>Great Blue Heron (<i>Ardea herodias</i>)</b>	<b>Spotted Sandpiper (<i>Actitis macularia</i>)</b>
<b>Gull (<i>Larus spp.</i>)</b>	<b>Tree Swallow (<i>Tachycineta bicolor</i>)</b>
Hooded Merganser ( <i>Lophodytes cucullatus</i> )	Turkey Vulture ( <i>Cathartes aura</i> )
<b>House Sparrow (<i>Passer domesticus</i>)</b>	<b>Wilson's Phalarope (<i>Phalaropus tricolor</i>)</b>
	Yellow Warbler ( <i>Dendroica petechia</i> )
	<b>Yellow-headed Blackbird (<i>Xanthocephalus xanthocephalus</i>)</b>
<b>MAMMALS</b>	
Coyote ( <i>Canis latrans</i> )	
Raccoon ( <i>Procyon lotor</i> )	
Striped Skunk ( <i>Mephitis mephitis</i> )	
Weasel ( <i>Mustela sp.</i> )	
<b>White-tailed Deer (<i>Odocoileus virginianus</i>)</b>	

**Bolded** species were documented during the 2005 monitoring. All other species have been documented during one or more of the previous monitoring seasons.

### 3.8 Photographs

Representative photos taken from photo-points and transect ends are provided in **Appendix C**.

### 3.9 Maintenance Needs/Recommendations

The berm and associated water control structures were in good condition during the mid-season visit. Excavated soils were deposited in adjacent upland areas during the spring of 2005 and by July, some of these areas were infested with weedy species, primarily thistle and spotted knapweed. Weed control is recommended in these areas until desired species get established.

**Table 4: Summary of 2005 wetland function/value ratings and functional points<sup>1</sup> at the Batavia Mitigation Project.**

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	1996 Baseline Assessment <sup>2</sup>	2005 Assessment
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.3)
MNHP Species Habitat	Low (0.1)	High (1)
General Wildlife Habitat	High (1.0)	Exceptional (1.0)
General Fish/Aquatic Habitat	Mod (0.7)	Low (0.3)
Flood Attenuation	Mod (0.5)	Mod (0.6)
Short and Long Term Surface Water Storage	High (1.0)	High (1.0)
Sediment, Nutrient, Toxicant Removal	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	High (1.0)	High (0.9)
Production Export/Food Chain Support	High (0.9)	High (0.9)
Groundwater Discharge/Recharge	Low (0.1)	High (1.0)
Uniqueness	Mod (0.5)	Mod (0.6)
Recreation/Education Potential	Mod (0.7)	High (1.0)
Actual Points/Possible Points	7.8/12	9.6 / 12
% of Possible Score Achieved	65%	80 %
Overall Category	II	II
Total Acreage of Assessed Wetlands within Easement (north and south cells)	137.00	138.25
Functional Units (acreage x actual points)	1069	1327
Net Acreage Gain (ac)	NA	1.25
Net Functional Unit Gain (fu)	NA	258
Total Functional Unit Gain (fu)	NA	258

<sup>1</sup> See completed MDT functional assessment forms in Appendix B for further detail.

<sup>2</sup> Baseline assessment was performed by MDT using the Montana Field Evaluation Form (Revised 7/1/96).

### 3.10 Current Credit Summary

According to MDT project files, mitigation credits were determined by assigning credit ratios for creation and enhancement across the entire site. A total of 28.72 acres of credit was agreed upon by MDT, the USFWS, and COE, with the potential for an additional 6.8 acres to be credited following post-project monitoring.

Credits were broken down as follows:

Wetland Creation minus impacts from new dike:	18.2 acres credited at 2:1	=	9.10 acres
North Cell enhancement:	76.8 acres credited at 8:1	=	9.60 acres
South Cell enhancement:	60.0 acres credited at 6:1	=	<u>10.00 acres</u>
	Total	=	28.72 acres

With the newly created aquatic habitat at the four borrow areas, the site stands to gain approximately 5 acres of wetland habitat that was anticipated when the project was initiated.

Factoring in the appropriate ratios listed above, approximately 19.6 acres of enhancement credit has been gained in the north and south cells through the creation of more open water habitat around the many small islands. The COE has concurred with this determination. Creating habitat diversity by adding open water areas has likely attracted more wildlife species and potentially encouraged the establishment different emergent and submergent plant communities. These areas would be even further enhanced with increased water levels across the site.

Current credit that has developed at the site consists of 1.25 acres wetland creation + 4.93 acres open water creation + 19.6 acres enhancement credit = 25.78 acres. Subtracting 4.3 acres from dike construction leaves 21.48 acres of net aquatic habitat credit. As mentioned, wetlands may well develop in the newly excavated open water areas. Future monitoring will document wetland establishment in these areas.

#### 4.0 REFERENCES

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## Appendix A

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### FIGURES 2 & 3

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*MDT Wetland Mitigation Monitoring  
Batavia  
Kalispell, Montana*

# Figure 2 – Monitoring Activity Locations

## LEGEND

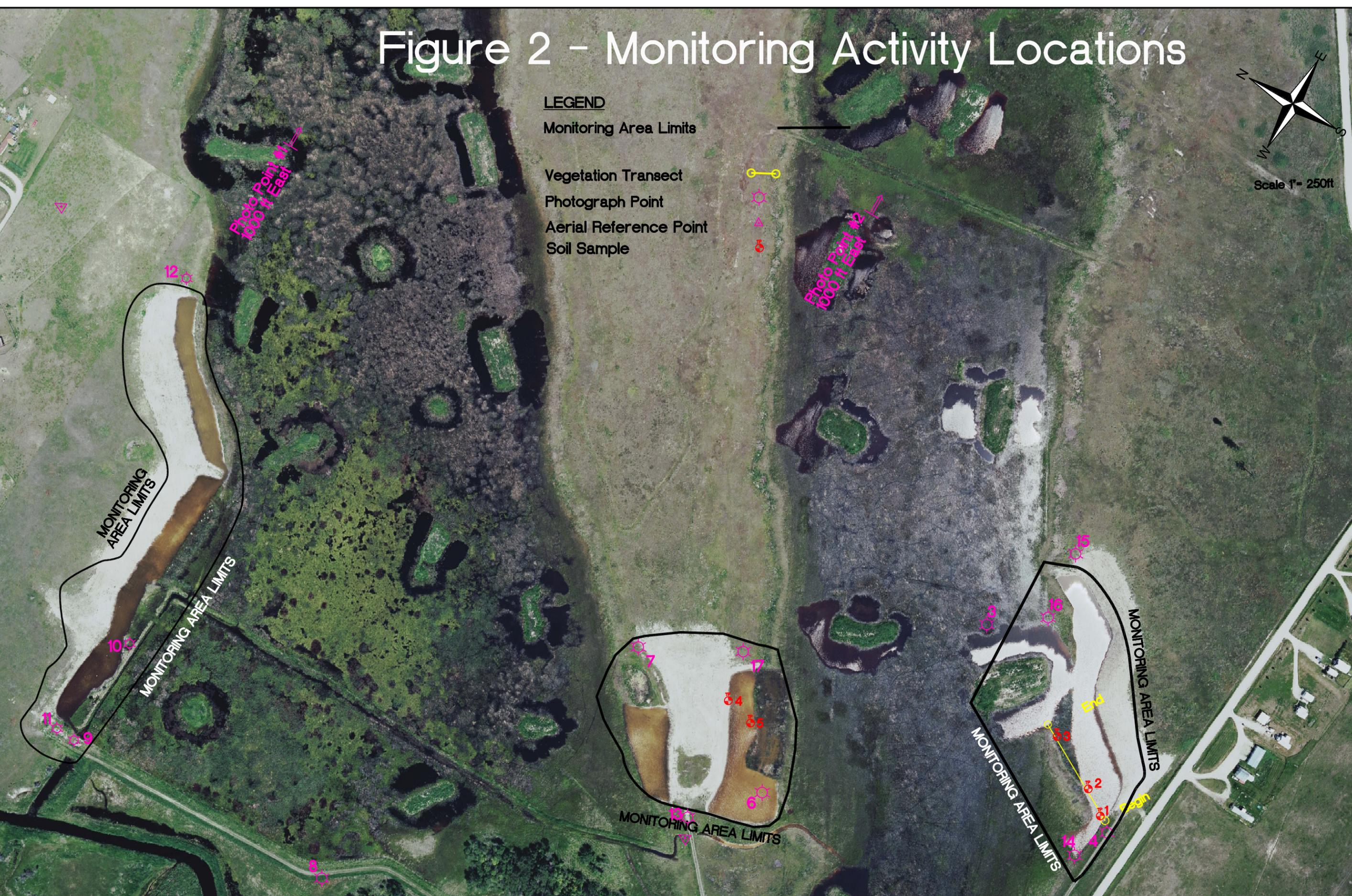
Monitoring Area Limits

Vegetation Transect

Photograph Point

Aerial Reference Point

Soil Sample



PROJECT NAME	MDT Batavia Wetland Mitigation
DRAWING TITLE	Monitoring Activity Locations
PROJ. NO:	33054.104
FILE NAME:	TASK104BASE2003.dwg
SCALE:	1" = 300ft
LOCATION:	Batavia
DRAWN:	RAVLL
CHECKED:	AK
APPVD:	JB
PROJ. MGR:	BD
SHEET NUMBER	F2 OF .
REV	-
DATE:	11/10/05

LAND & WATER CONSULTING, INC.  
P.O. BOX 8254  
Missoula, MT 59807

# Figure 3 - Mapped Site Features 2005



## LEGEND

- Monitoring Area Limits ———
- Wetland Boundary ———
- Vegetation Community Boundary ———
- Open Water 2005 ———

Base Photograph Date: July 05, 2005

### Net Wetland Area Within Monitoring Limits:

Wetland "A"	0.925 Acres
Wetland "B"	0.58 Acres
Wetland "C"	0.86 Acres
Wetland "D"	2.83 Acres

### Net Open Water Area Within Monitoring Limits:

Wetland "A"	2.06 Acres
Wetland "B"	0.52 Acres
Wetland "C"	0.94 Acres
Wetland "D"	1.41 Acres

### Vegetation Types:

- ① Agropyron smithii
- ② Hordeum jubatum/Eleocharis palustris
- ③ Juncus balticus/Phalaris arundinacea
- ④ Scirpus acutus
- ⑤ Agropyron smithii/Potentilla anserina
- ⑥ Ceratophyllum demersum
- ⑦ Eleocharis palustris



PROJECT NAME	MDT Batavia Wetland Mitigation		
DRAWING TITLE	Mapped Site Features 2005		
PROJ. NO.	B33054.104	DRAWN BY	RA/LL
LOCATION		PROJ. MGR.	J.Berglund
SCALE	1"=250'	CHECKED BY	
FILE NAME	L:\330054\104Batavia\dwg\TASK104BASE2005.dwg	APP'D BY	



## **Appendix B**

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**2005 WETLAND MITIGATION SITE MONITORING FORM**  
**2005 BIRD SURVEY FORMS**  
**2005 WETLAND DELINEATION FORMS**  
**2005 FUNCTIONAL ASSESSMENT FORMS**

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*MDT Wetland Mitigation Monitoring*  
*Batavia*  
*Kalispell, Montana*

# LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Batavia Project Number: B43054.00 - 0104 Assessment Date: 7/22/05  
 Location: Batavia WPA - Kalispell MDT District: Missoula Milepost: \_\_\_\_\_  
 Legal description: T28N R22W Section 20, 21 Time of Day: 0800  
 Weather Conditions: Partly cloudy & warm - 75 degrees Person(s) conducting the assessment: Traxler  
 Initial Evaluation Date: 7 / 12 / 01 Visit #: 2 Monitoring Year: 2005 (year 5)  
 Size of evaluation area:     Land use surrounding wetland: Rural Residential, Agriculture

## HYDROLOGY

**Surface Water** Source: Ashley Creek, groundwater  
 Inundation: Present  Absent  Average depths: 1-2ft Range of depths: 0 - 4 ft  
 Assessment area under inundation: 50%  
 Depth at emergent vegetation-open water boundary: 1-2 ft  
 If assessment area is not inundated are the soils saturated w/in 12" of surface: Yes  No   
 Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): Each of the wetland sites monitored had varying degrees of inundation and evidence of inundation ranging from drift lines to stained vegetation and standing water.

### Groundwater

Monitoring wells: Present  Absent   
 Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

### Additional Activities Checklist:

- Map emergent vegetation-open water boundary on air photo
- Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining etc.)
- NA GPS survey groundwater monitoring wells locations if present

### COMMENTS/PROBLEMS:

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## VEGETATION COMMUNITIES: BATAVIA

Community No.:   1   Community Title (main species): Elymus smithii/Elymus repens

Dominant Species	% Cover	Dominant Species	% Cover
Elymus smithii	25	Distichlis stricta	3
Elymus cinereus	5	Achillea millefolium	5
Koeleria macrantha	3	Elymus repens	25
Juncus balticus	3	Aster ascendens	20
Poa pratensis	10	Poa juncifolia	10

**COMMENTS/PROBLEMS:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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

Dominant Species	% Cover	Dominant Species	% Cover
Hordeum jubatum	40	Distichlis stricta	5-10%
Puccinellia nuttalliana	10	Juncus balticus	2
Eleocharis palustris	35	Deschampsia cespitosa	1
Phalaris arundinacea	3	Potentilla anserina	trace
Scirpus acutus	1	Typha latifolia	trace

**COMMENTS/PROBLEMS:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Community No.:   3   Community Title (main species): Phalaris arundinacea/Juncus balticus

Dominant Species	% Cover	Dominant Species	% Cover
Juncus balticus	15-20	Deschampsia cespitosa	3
Phalaris arundinacea	40	Potentilla anserina	3
Carex lasiocarpa	15-20	Cirsium arvense	1
Mentha arvensis	5	Carduus nutans	Trace
Muhlenbergia asperifolia	5	Aster ascendens	1

**COMMENTS/PROBLEMS:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Additional Activities Checklist:**

         Record and map vegetative communities on air photo

## VEGETATION COMMUNITIES: BATAVIA

Community No.: 4 Community Title (main species): Scirpus acutus

Dominant Species	% Cover	Dominant Species	% Cover
Scirpus acutus	80	Mentha arvensis	1
Phalaris arundinacea	15	Polygonum amphibium	1
Juncus balticus	10	Potentilla anserina	trace
Carex lasiocarpa	10	Triglochin maritima	trace
Ceratophyllum demersum	5	Sium suave	trace

**COMMENTS/PROBLEMS:** \_\_\_\_\_

Community No.: 5 Community Title (main species): Elymus smithii/Potentilla anserina disturbed

Dominant Species	% Cover	Dominant Species	% Cover
Elymus smithii	20	Lotus corniculatus	2
Potentilla anserina	20	Melilotus alba	3
Phalaris arundinacea	20	Alopecurus pratensis	trace
Cirsium arvense	15	Bare ground	25
Carduus nutans	3		

**COMMENTS/PROBLEMS:** \_\_\_\_\_

Community No.: 6 Community Title (main species): Ceratophyllum demersum

Dominant Species	% Cover	Dominant Species	% Cover
Ceratophyllum demersum	90		
Potamogeton natans	5		
Scirpus acutus	5		
Eleocharis palustris			
Potamogeton pectinatus	1		

**COMMENTS/PROBLEMS:** \_\_\_\_\_

Community No.: 7 Community Title (main species): Eleocharis palustris

Dominant Species	% Cover	Dominant Species	% Cover
Hordeum jubatum	20	Distichlis stricta	5-10%
Puccinellia nuttalliana	10	Juncus balticus	2
Eleocharis palustris	60	Deschampsia cespitosa	1
Phalaris arundinacea	2	Potentilla anserina	trace
Scirpus acutus	1		

COMMENTS/PROBLEMS:

**COMPREHENSIVE VEGETATION LIST**

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
<i>Poa pratensis</i>	1	<i>Chenopodium album</i>	5
<i>Elymus cinereus</i>	1	<i>Sisymbrium altissimum</i>	5
<i>Achillea millefolium</i>	1,3	<i>Distichlis stricta</i>	1,2,5,7
<i>Koeleria macrantha</i>	1	<i>Ceratophyllum demersum</i>	2,6
<i>Juncus balticus</i>	1,2,3,4,5,6,7	<i>Antennaria rosea</i>	1
<i>Elymus repens</i>	1,2,3	<i>Deschampsia cespitosa</i>	2,3,5,7
<i>Tragopogon dubius</i>	1	<i>Polypogon monspeliensis</i>	2
<i>Hordeum jubatum</i>	1,2,3,5,7	<i>Aster ascendens</i>	1,2,3,5
<i>Phleum pratense</i>	1	<i>Festuca campestris</i>	1
<i>Smilacina stellata</i>	5	<i>Lactuca serriola</i>	2
<i>Eleocharis palustris</i>	2,5,6,7	<i>Muhlenbergia asperifolia</i>	3
<i>Puccinellia nuttalliana</i>	1,2,3,7	<i>Stachys palustris</i>	3
<i>Spartina gracilis</i>	1,2,3	<i>Carex lasiocarpa</i>	
<i>Typha latifolia</i>	2	<i>Sium suave</i>	4,6
<i>Elymus smithii</i>	1,2,3,5	<i>Potamogeton pectinatus</i>	6
<i>Aster hesperius</i>	1,5	<i>Sonchus asper</i>	5
<i>Potentilla anserina</i>	2,3,4,5,7	<i>Poa juncifolia</i>	1
<i>Phalaris arundinacea</i>	2,3,4,5,7	<i>Juncus nodosus</i>	4
<i>Scirpus acutus</i>	2,4,5,6,7	<i>Carex diandra</i>	3,4
<i>Alisma plantago-aquatica</i>	2,6		
<i>Hippuris vulgaris</i>	6		
<i>Agrostis stolonifera</i>	1,2,3		
<i>Cirsium vulgare</i>	3		
<i>Carduus nutans</i>	1,3,5		
<i>Triglochin maritima</i>	2,3,4		
<i>Polygonum amphibian</i>	3,4		
<i>Cirsium arvense</i>	2,3,4,5		
<i>Lotus corniculatus</i>	5		
<i>Melilotus alba</i>	1,5		
<i>Melilotus officinalis</i>	5		
<i>Alopecurus pratensis</i>	1,5		
<i>Epilobium watsonii</i>	1		
<i>Taraxacum officinale</i>	5		
<i>Potamogeton natans</i>	6		
<i>Mentha arvensis</i>	3,4,5		

COMMENTS/PROBLEMS: \_\_\_\_\_

\_\_\_\_\_





## PHOTOGRAPHS

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

Checklist:

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

Location	Photo Frame #	Photograph Description	Compass Reading
1		See Figure 2 for locations	
2			
3			
4			
5			
6			
7			
8			
9			
10			
Transect			

**COMMENTS/PROBLEMS:** Seven new photo locations were added in 2005 to better document wetland establishment in the newly excavated areas.

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## GPS SURVEYING

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

Checklist:

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

COMMENTS/PROBLEMS: GPS not used during 2005

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### WETLAND DELINEATION

(Attach Corps of Engineers delineation forms)

At each site conduct the items on the checklist below:

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

COMMENTS/PROBLEMS: See attached completed delineation forms.

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### FUNCTIONAL ASSESSMENT

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

COMMENTS/PROBLEMS: See attached completed functional assessment forms.

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### MAINTENANCE

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

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

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

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

YES  NO\_\_

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

If no, describe the problems below.

COMMENTS/PROBLEMS: Spoils piles around the periphery of the excavated areas are severely weed infested in some locations. Weed spraying is advised.

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

Project / Site: <b><u>Batavia WPA</u></b> Applicant / Owner: <b><u>MDT</u></b> Investigator: <b><u>PBSJ - Traxler</u></b>	Date: <b><u>July 22, 2005</u></b> County: <b><u>Flathead</u></b> State: <b><u>Montana</u></b>
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Do Normal Circumstances exist on the site? <b><u>Yes</u></b> Is the site significantly disturbed (Atypical Situation)? <b><u>No</u></b> Is the area a potential Problem Area? <b><u>No</u></b> (If needed, explain on reverse side)	Community ID: <b><u>Upland</u></b> Transect ID: _____ Plot ID: <b><u>1</u></b>
--	--

**VEGETATION (USFWS Region 9: Northwest)**

Dominant Species	Stratum	Indicator	Dominant Species	Stratum	Indicator
1. <i>Agropyron repens</i>	Herb	FACU	11.		
2. <i>Poa pratensis</i>	Herb	FACU+	12.		
3. <i>Achellia millefolium</i>	Herb	FACU	13.		
4. <i>Distichlis apicata</i>	Herb	FAC+	14.		
5. <i>Agropyron smithii</i>	Herb	FACU	15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): <b>1 / 5 = 20%</b>			FAC Neutral: <b>0 / 4 = 0%</b>		
Remarks: <b><u>Upland plot between Wetlands B &amp; C.</u></b>					

**HYDROLOGY**

<p><b><u>No</u></b> Recorded Data (Describe in Remarks):  <b><u>N/A</u></b> Stream, Lake, or Tide Gauge  <b><u>No</u></b> Aerial Photographs  <b><u>N/A</u></b> Other    <b><u>No</u></b> No Recorded Data</p>	Wetland Hydrology Indicators Primary Indicators: <b><u>NO</u></b> Inundated <b><u>NO</u></b> Saturated in Upper 12 Inches <b><u>NO</u></b> Water Marks <b><u>NO</u></b> Drift Lines <b><u>NO</u></b> Sediment Deposits <b><u>NO</u></b> Drainage Patterns in Wetland Secondary Indicators (2 or more required): <b><u>YES</u></b> Oxidized Root Channels in Upper 12 inches <b><u>NO</u></b> Water-Stained Leaves <b><u>NO</u></b> Local Soil Survey Data <b><u>NO</u></b> FAC-Neutral Test <b><u>NO</u></b> Other (Explain in Remarks)
Field Observations: Depth of Surface Water <b><u>N/A</u></b> ____ (in.) Depth to Free Water in Pit > <b><u>18</u></b> (in.) Depth to Saturated Soil > <b><u>18</u></b> (in.)	
Remarks:	

**SOILS**

Map Unit Name (Series and Phase): **na**  
 Map Symbol: **na** Drainage Class: **na** Mapped Hydric Inclusion? **\_**  
 Taxonomy (Subgroup): **na** Field Observations confirm Mapped Type? **No**

<b>Profile Description</b>					
<b>Depth (inches)</b>	<b>Horizon</b>	<b>Matrix Color (Munsell Moist)</b>	<b>Mottle Color(s) (Munsell Moist)</b>	<b>Mottle Abundance/Contrast</b>	<b>Texture, Concretions, Structure, etc.</b>
8	A	10 YR 3/2	/	N/A	Silt Loam
			/	N/A	
16	B	7.5 YR 5/3	/	N/A	Silty Clay Loam
			/	N/A	
		/	/	N/A	
		/	/	N/A	
		/	/	N/A	
		/	/	N/A	

Hydric Soil Indicators:

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

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <b><u>NO</u></b>	Is this Sampling Point within a Wetland? <b><u>NO</u></b>
Wetland Hydrology Present? <b><u>NO</u></b>	
Hydric Soils Present? <b><u>NO</u></b>	

Remarks:

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

Project / Site: <b><u>Batavia WPA</u></b> Applicant / Owner: <b><u>MDT</u></b> Investigator: <b><u>PBSJ - Traxler</u></b>	Date: <b><u>July 22, 2005</u></b> County: <b><u>Flathead</u></b> State: <b><u>Montana</u></b>
---	---

Do Normal Circumstances exist on the site? <b><u>Yes</u></b> Is the site significantly disturbed (Atypical Situation)? <b><u>No</u></b> Is the area a potential Problem Area? <b><u>No</u></b> (If needed, explain on reverse side)	Community ID: <b><u>EM</u></b> Transect ID: _____ Plot ID: <b><u>2</u></b>
--	--

**VEGETATION (USFWS Region 9: Northwest)**

Dominant Species	Stratum	Indicator	Dominant Species	Stratum	Indicator
1. <i>Carex lasiocarpa</i>	Herb	OBL	11.		
2. <i>Carex diandra</i>	Herb	OBL	12.		
3. <i>Phalaris arundinacea</i>	Herb	FACW	13.		
4. <i>Deschampsia cespitosa</i>	Herb	FACW	14.		
5. <i>Triglochin maritimum</i>	Herb	OBL	15.		
6. <i>Alopecurus pratensis</i>	Herb	FACW	16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): <b>6 / 6 = 100%</b>			FAC Neutral: <b>6 / 6 = 100%</b>		
Remarks:					

**HYDROLOGY**

<p><b><u>No</u></b> Recorded Data (Describe in Remarks):  <b><u>N/A</u></b> Stream, Lake, or Tide Gauge  <b><u>Yes</u></b> Aerial Photographs  <b><u>N/A</u></b> Other</p> <p><b><u>No</u></b> No Recorded Data</p>	Wetland Hydrology Indicators Primary Indicators: <b><u>NO</u></b> Inundated <b><u>YES</u></b> Saturated in Upper 12 Inches <b><u>YES</u></b> Water Marks <b><u>NO</u></b> Drift Lines <b><u>NO</u></b> Sediment Deposits <b><u>YES</u></b> Drainage Patterns in Wetland Secondary Indicators (2 or more required): <b><u>YES</u></b> Oxidized Root Channels in Upper 12 inches <b><u>NO</u></b> Water-Stained Leaves <b><u>NO</u></b> Local Soil Survey Data <b><u>YES</u></b> FAC-Neutral Test <b><u>NO</u></b> Other (Explain in Remarks)
Field Observations: Depth of Surface Water <b><u>N/A</u></b> ____ (in.) Depth to Free Water in Pit = <b><u>2</u></b> (in.) Depth to Saturated Soil = <b><u>0</u></b> (in.)	
Remarks:	

**SOILS**

Map Unit Name (Series and Phase): **na**  
 Map Symbol: **na** Drainage Class: **na** Mapped Hydric Inclusion? **\_**  
 Taxonomy (Subgroup): **na** Field Observations confirm Mapped Type? **No**

<b>Profile Description</b>					
<b>Depth (inches)</b>	<b>Horizon</b>	<b>Matrix Color (Munsell Moist)</b>	<b>Mottle Color(s) (Munsell Moist)</b>	<b>Mottle Abundance/Contrast</b>	<b>Texture, Concretions, Structure, etc.</b>
8	A	10 YR 2/1	/	N/A	Loam roots
16	B	10 R 4/1	/	N/A	Sandy Loam
		/	/	N/A	
		/	/	N/A	
		/	/	N/A	

Hydric Soil Indicators:

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

Remarks:

**WETLAND DETERMINATION**

Hydrophytic Vegetation Present? <b><u>YES</u></b>	Is this Sampling Point within a Wetland? <b><u>YES</u></b>
Wetland Hydrology Present? <b><u>YES</u></b>	
Hydric Soils Present? <b><u>YES</u></b>	

Remarks: **Plot was taken in undisturbed wetland habitat adjacent to vegetation transect.**



**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 Bald Eagle
- No usable habitat  D  S \_\_\_\_\_

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

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

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

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

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

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

- Primary or Critical habitat (list species)  D  S nesting Black Tern
- 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 14B(i) above, find the corresponding rating of High (H), Moderate (M), or Low (L) for this function.

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

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

**14C. GENERAL WILDLIFE HABITAT RATING**

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

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

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

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

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

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

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

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

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

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

Evidence of Wildlife Use from 14C(i)	Wildlife Habitat Features Rating from 14C(ii)			
	<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 or excessive gradient, then check the NA box above.

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

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

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

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

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

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

Types of Fish Known or Suspected within AA	Modified Habitat Quality from 14D(ii)			
	<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	--	--	--	.3 (L)
No fish	--	--	--	--

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

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

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

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

Estimated wetland area in AA subject to periodic flooding	<input checked="" type="checkbox"/> ≥ 10 acres			<input type="checkbox"/> <10, >2 acres			<input type="checkbox"/> ≤2 acres		
	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
% of flooded wetland classified as forested, scrub/shrub, or both									
AA contains no outlet or restricted outlet	--	--	.6 (M)	--	--	--	--	--	--
AA contains unrestricted outlet	--	--	--	--	--	--	--	--	--

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

Y  N Comments: Homes located downstream

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

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

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

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

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input checked="" type="checkbox"/> >5 acre feet			<input type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Duration of surface water at wetlands within the AA									
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 the potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input.

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

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

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

Comments: Ashley Creek is on DEQ impaired waterbody list, but most of WPA does not experience high nutrient or sediment load due to diversion.

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

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

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

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	<input type="checkbox"/> Permanent / Perennial	<input checked="" type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	--	.9 (H)	--
35-64 %	--	--	--
< 35 %	--	--	--

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

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

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

A = acreage of vegetated component in the AA. B = structural diversity rating from #13. C = Yes (Y) or No (N) as to whether or not the AA contains a surface or subsurface outlet. P/P = permanent/perennial; S/I = seasonal/intermittent; T/E/A= temporary/ephemeral/absent.

A	<input checked="" type="checkbox"/> Vegetated component >5 acres						<input type="checkbox"/> Vegetated component 1-5 acres						<input type="checkbox"/> Vegetated component <1 acre					
B	<input checked="" 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 type="checkbox"/> Low	
C	<input checked="" 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 type="checkbox"/> N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	.9H	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T/E/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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

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

**i.  Discharge Indicators**

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

**ii.  Recharge Indicators**

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

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

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

Comments: groundwater recharge

**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 checked="" type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant
Estimated Relative Abundance from 11									
Low disturbance at AA (12i)	--	--	--	--	.6M	--	--	--	--
Moderate disturbance at AA (12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (12i)	--	--	--	--	--	--	--	--	--

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

**14L. RECREATION / EDUCATION POTENTIAL**

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

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

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

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

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

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

Comments: Area is open to public except during waterfowl nesting season.

**FUNCTION, VALUE SUMMARY, AND OVERALL RATING**

Function and Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	low	0.30	1	
B. MT Natural Heritage Program Species Habitat	high	1.00	1	
C. General Wildlife Habitat	high	1.00	1	
D. General Fish/Aquatic Habitat	low	0.30	1	
E. Flood Attenuation	moderate	0.60	1	
F. Short and Long Term Surface Water Storage	high	1.00	1	
G. Sediment/Nutrient/Toxicant Removal	high	1.00	1	
H. Sediment/Shoreline Stabilization	high	0.90	1	
I. Production Export/Food Chain Support	high	0.90	1	
J. Groundwater Discharge/Recharge	high	1.00	1	
K. Uniqueness	moderate	0.60	1	
L. Recreation/Education Potential	high	1.00	1	
<b>Total:</b>		<b><u>9.60</u></b>	<b><u>12.00</u></b>	<b><u>1325.00</u></b>
<b>Percent of Total Possible Points:</b>			<b><u>80%</u></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 satisfied, 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, return 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 C

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### REPRESENTATIVE PHOTOGRAPHS

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*MDT Wetland Mitigation Monitoring  
Batavia  
Kalispell, Montana*



Photo Point No. 1: View looking southwest

Photo Point No. 2: View looking southwest



Photo Point No. 9: View looking east into Wetland A.

Photo Point No. 11: View looking east into Wetland A. Photo shows freshly excavated borrow area. Photo point est. in 2005.



Photo Point No. 12: View looking west into Wetland A from east end of excavation. Photo point established in 2005.

Photo Point No. 13: View looking northeast into Wetland B. Photo Point established in 2005 to show new excavation.



Photo Point No. 17: View looking west into Wetland C. Photo point established in 2005 to show new excavation.

Photo Point No. 13: View looking east into Wetland C. Photo Point established in 2005.



Photo Point No. 14: View looking northeast into Wetland D. Photo Point established in 2005.

Vegetation Transect: Looking northeast from beginning of transect. Entire transect excavated in 2005 – primarily OW.



Photo Point No. 16: View looking southwest into Wetland D. Photo Point established in 2005.

Photo Point No. 8: View looking east.

## **Appendix D**

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

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*MDT Wetland Mitigation Monitoring  
Batavia  
Kalispell, 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.