MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2006

Batavia
Kalispell, Montana

Prepared for:

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

Prepared by:

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

December 2006

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, Kalispell Bypass, 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.

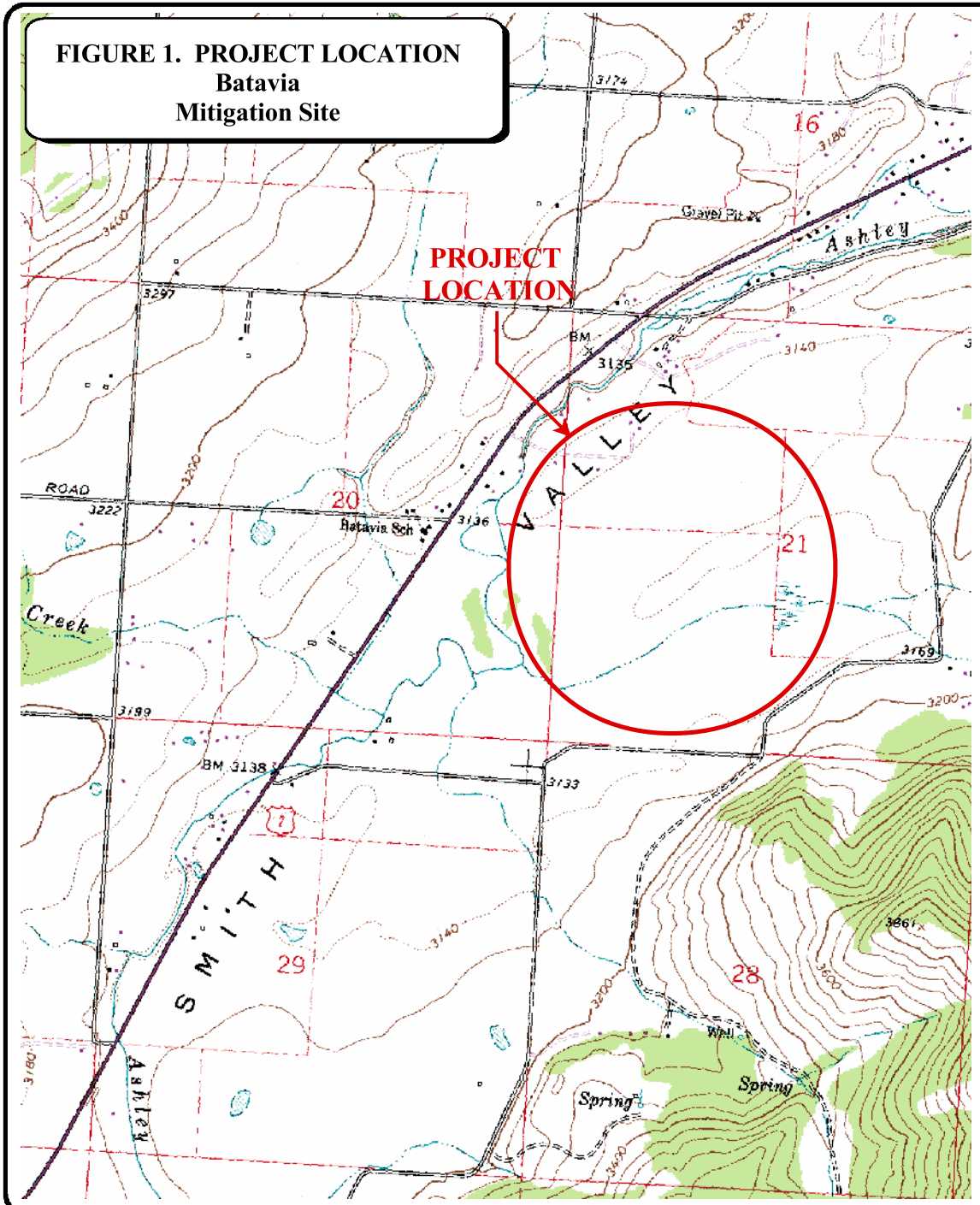
According to MDT project files, mitigation credits were determined by assigning credit ratios for creation and enhancement across the entire site. A total of 28.72 acres of credit was agreed upon by MDT, the USFWS, and Army Corps of Engineers (COE), with the potential for an additional 6.8 acres to be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

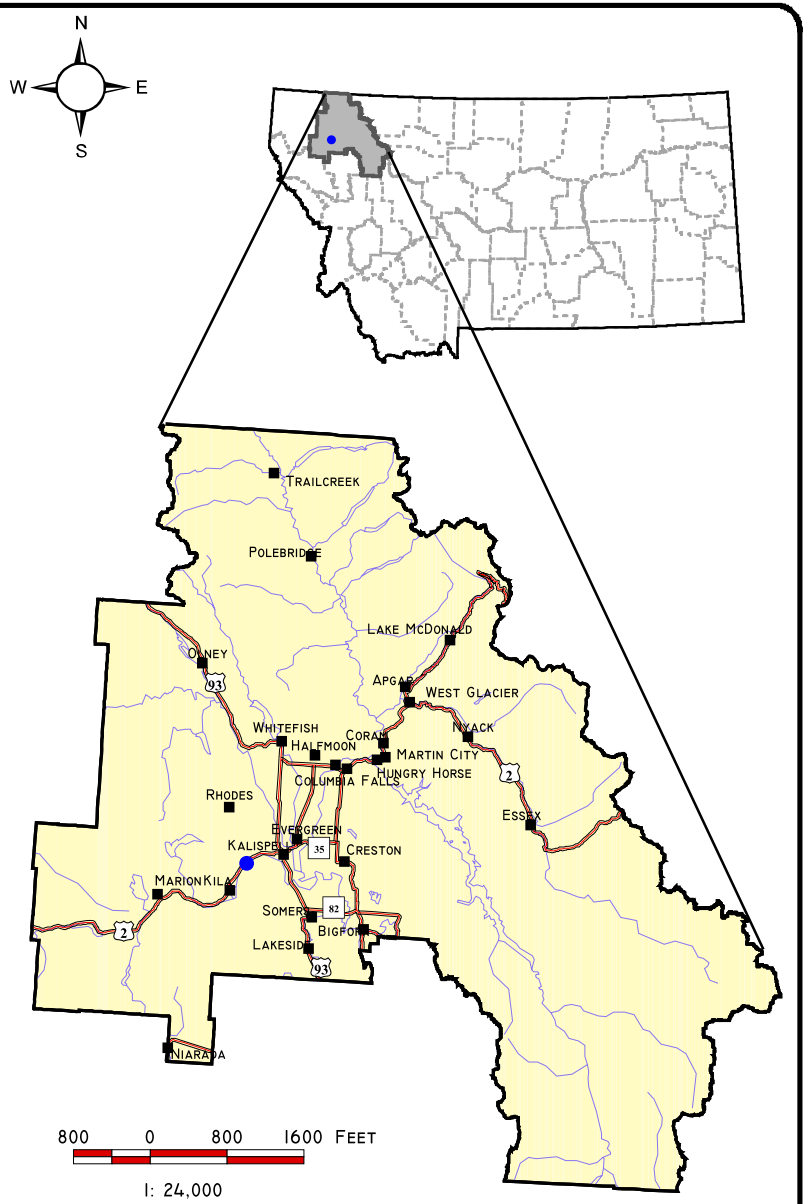
Wetland Creation minus impacts from new dike:	18.2 acres credited at 2:1	=	9.10 acres
North Cell enhancement:	76.8 acres credited at 8:1	=	9.60 acres
South Cell enhancement:	60.0 acres credited at 6:1	=	10.00 acres
	Total	=	28.72 acres

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 wetland creation. 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.

FIGURE 1. PROJECT LOCATION
Batavia
Mitigation Site





PROJECT #: 330054.006
DATE: DECEMBER 2006
LOCATION: KALISPELL, MT
PROJECT MANAGER: B. DUTTON
DRAWN BY: BN/LL

LAND & WATER CONSULTING, INC.

1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

2.0 METHODS

2.1 Monitoring Dates and Activities

The site was visited on May 2nd (spring) and August 1st (mid-season) 2006. The May to early-June period was selected for the spring visit because monitoring between 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 August and delineated based on vegetation, hydrology and soil characteristics; however, monitoring forms were not completed. This monitoring approach was established by MDT and PBS&J 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 (Environmental Laboratory 1987). 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 Wetland Mitigation 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** in **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 Post, Buckley, Schuh, and Jernigan (PBS&J) 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 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 2006. 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 (**Appendix B**).

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 (**Bird Survey** 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**) (Berglund 1999). 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. Photo point locations were recorded with a resource grade GPS in 2001, and are shown on **Figure 2** in **Appendix A**. All photographs were taken using a digital camera. A description and compass direction for each photograph was recorded on the wetland monitoring form. Photo points were revisited in 2006, including the seven new photo point locations which were added in 2005 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 2006 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 PBS&J.

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 3126.3 during the mid-season visit in 2006. 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), 2004 (16.87 inches) and 2005 (17.38 inches) were 67, 79, 82, 79, 107, and 110 percent, respectively, of the total annual mean precipitation (15.75 inches) in this area. Precipitation totals for 2006 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. Continued above average precipitation as shown in 2004 and 2005 could serve to relieve drought conditions in the region and improve conditions at the Batavia WPA.

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 2006 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 2006 which is the same as what was recorded in 2005, although with the new excavation, portions of some of these plant communities were converted to shallow open water (**Figure 3** in **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 COE Form (**Appendix B**).

Table 1: ***2001 - 2006 Batavia vegetation species list.***

Scientific Name	Region 9 (Northwest) Wetland Indicator
Achillea millefolium	FACU
Agropyron smithii	FACU
Agropyron repens	FACU
Agrostis alba	FAC
Agrostis stolonifera	FAC
Alisma plantago-aquatica	OBL
Alopecurus pratensis	FACW
Antennaria spp.	--
Aster hesperius	OBL
Carex diandra	OBL
Carex parryana	FAC+
Carduus nutans	(Status NX)
Centaurea maculosa	--
Ceratophyllum demersum	OBL
Chenopodium album	FAC
Cirsium arvense	FACU+
Cirsium vulgare	FACU
Cynoglossum officinale	FACU
Deschampsia cespitosa	FACW
Distichlis stricta	FAC+
Eleocharis palustris	OBL
Elymus cinereus	FAC
Epilobium watsonii	FACW
Erigeron lonchophyllus	FACW
Gnaphalium palustre	FAC+
Hippuris vulgaris	OBL
Hordeum jubatum	FAC
Juncus balticus	FACW+
Juncus castaneus	FACW
Juncus nevadensis	FACW
Koeleria cristata	--
Lotus corniculatus	FAC
Melilotus alba	FACU
Melilotus officinalis	FACU
Mentha arvensis	FACW-
Monolepis nuttalliana	FAC-
Muhlenbergia asperifolia	FACW
Phalaris arundinacea	FACW
Phleum pratense	FAC-
Poa juncifolia	FACU+
Poa pratensis	FAC
Polygonum amphibium	OBL
Polypogon monspeliensis	FACW
Potamogeton natans	OBL

Table 1 (Continued): ***2001 - 2006 Batavia vegetation species list.***

Scientific Name	Region 9 (Northwest) Wetland Indicator
Potentilla anserina	OBL
Puccinellia nuttalliana	OBL
Ranunculus cymbalaria	OBL
Rumex crispus	FAC+
Scirpus acutus	OBL
Sisymbrium altissimum	--
Sisyrinchium angustifolium	FACW-
Smilacina stellata	--
Sparganium emersum	OBL
Spartina gracilis	FACW
Stachys palustris	FACW+
Taraxacum officinale	FACU
Tragopogon dubius	--
Triglochin maritimum	OBL
Typha latifolia	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. Wetland vegetation began to establish around the perimeter of the excavated areas in 2006, generally creating a narrow (1'-4') fringe. The results are detailed in the attached COE Form (**Appendix B**), and are summarized in **Table 2** and **Charts 1** and **2**.

Spoils piles created in 2005 were generally well vegetated in 2006 with native upland grasses seeded in these areas. However, the spoil pile adjacent to wetland "A" contained significant weed infestation in 2006. Spotted knapweed and thistle are common in this area and are out-competing the seeded grasses. According to the USFWS, weed mapping at the Batavia WPA in 2005 showed 60 acres of musk thistle at a low density, 13 acres of Canada thistle at a low density, and 10 acres of spotted knapweed at a low density (USFWS 2006). Approximately 8 acres of Canada thistle were sprayed using a mixture of curtail and milestone on 6/6/06. The USFWS intends to have the remaining thistle and knapweed infestations sprayed in 2007 through the Fish and Wildlife Service Weed Striketime (USFWS 2006).

Table 2: ***2001 - 2006 vegetation transect data summary.***

Monitoring Year	2001	2002	2003	2004	2005	2006
Transect Length (feet)	318	318	318	318	318	318
# Vegetation Community Transitions along Transect	4	4	4	4	2	3
# Vegetation Communities along Transect	4	4	4	4	2	3
# Hydrophytic Vegetation Communities along Transect	3	3	3	3	1	2
Total Vegetative Species	29	22	22	22	4	5
Total Hydrophytic Species	21	13	13	13	1	2
Total Upland Species	8	9	9	9	3	3
Estimated % Total Vegetative Cover	75	75	75	75	20	20
% Transect Length Comprised of Hydrophytic Vegetation Communities	79	81	81	81	19	19
% Transect Length Comprised of Upland Vegetation Communities	21	19	19	19	1	1
% Transect Length Comprised of Unvegetated Open Water	0	0	0	0	80	80
% Transect Length Comprised of Bare Substrate	0	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.***

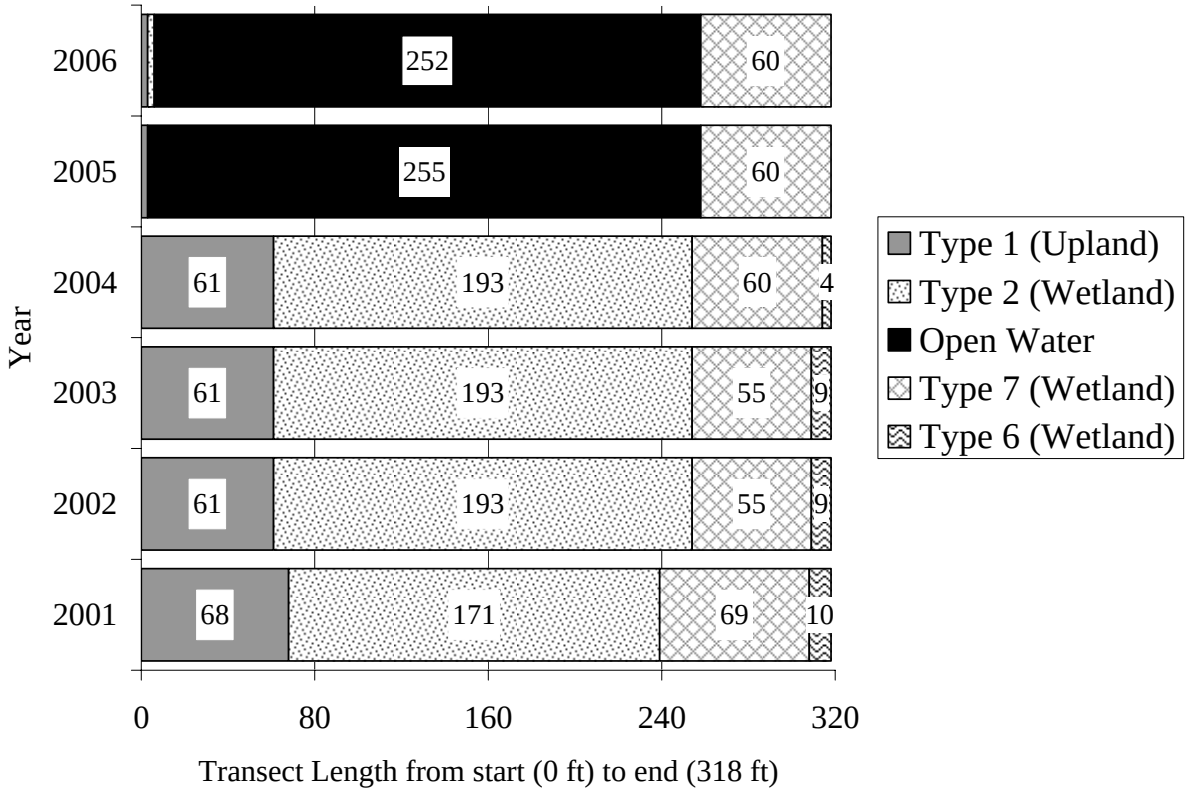
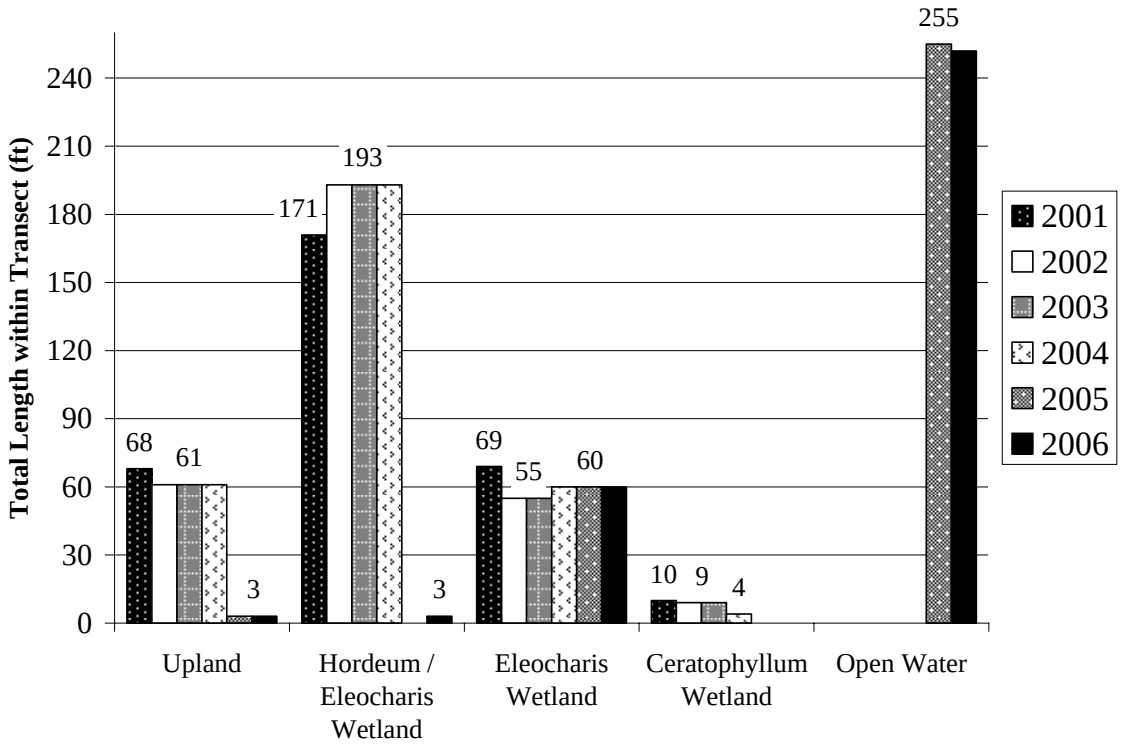


Chart 2: ***Length of vegetation communities within Transect 1 for each year monitored.***



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 2006 as each was inundated with at least 12 inches of standing water and one location with 24 inches of water. 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 COE Wetland Delineation Forms are included in **Appendix B**. Soils, vegetation, and hydrology are discussed in preceding sections. The delineated areas in 2006 are similar to those observed in 2005, except around the perimeter of the excavated areas, where a narrow (1' – 4') fringe has begun to develop. For the most part, the remaining open water areas created in 2005 remained unvegetated, with just individual scattered plants noted.

In order to determine the acreage of wetland creation in the three monitoring areas, the original pre-project wetland delineation was overlaid onto the 2006 delineation for direct comparison. When comparing the preconstruction delineation to current conditions, delineation boundaries at Wetland A showed a gain of 0.16 acre. Further comparison of the pre and post-project delineations show a gain of 0.52 acre at Wetland B, 0.41 acre at Wetland C, and 0.50 acre at Wetland D. Total wetland creation for the four wetlands is 1.60 acres, which is a gain of 0.35 acres over the 2005 delineation. 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 6.53 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 canarygrass, 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 2006 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 2006 were similar to previous years. Of interest in 2005, but not in 2006 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. This species may have been present in 2006 but was not documented during the spring or mid-season visits.

Table 3: ***2001 – 2006 fish and wildlife species observed at the Batavia Wetland Mitigation Site.***

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

Bolded species were documented during the 2006 monitoring. All other species have been documented during one or more of the previous monitoring seasons.

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 2005.

Table 4: ***Summary of 2006 wetland function/value ratings and functional points [1] at the Batavia Wetland Mitigation Project.***

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method [1]	1996 Baseline Assessment[2]	2006 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**	**138.60**
Functional Units (acreage x actual points)	**1069**	**1331**
Net Acreage Gain (ac)	**NA**	**1.60**
Net Functional Unit Gain (fu)	**NA**	**262**
Total Functional Unit Gain (fu)	**NA**	**262**

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

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

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.

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 as previously mentioned, some of these areas were infested with weedy species, primarily thistle and spotted knapweed. Weed control, as proposed by the USFWS, is recommended in these areas until desired species get established.

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	=	10.00 acres
	Total	=	28.72 acres

With the newly created aquatic habitat at the four borrow areas, the site stands to gain approximately 6.5 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 creation credit that has developed at the site consists of 1.60 acres wetland creation + 4.93 acres open water creation minus the 4.3 acres from dike construction leaves 2.23 acres of net creation. Credited at a 2:1 ratio, this equals 1.11 acres. Adding the 1.11 acres of creation credit to the 19.6 acres enhancement credit equals **20.71 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. Additional credits may be available in the north and south cells; however, a full delineation of the cells would be necessary to make that determination.

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Appendix A

FIGURES 2 & 3

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

Base Photograph Date: July 07, 2006

Photo Point #1 1000 ft East

Photo Point #2 1000 ft East

MONITORING AREA LIMITS

MONITORING AREA LIMITS

MONITORING AREA LIMITS

MONITORING AREA LIMITS

Begin

End

Scale 1"= 250ft

PROJECT NAME
MDT Batavia Wetland Mitigation

DRAWING TITLE
Monitoring Activity Locations

PBSJ

1120 Cedar
Missoula, MT 59802

PROJ NO: B33054.104	DRAWN: RAA		
LOCATION: Batavia	PROJ MGR: JB		
SCALE: 1"=250ft	CHECKED: MT	APPVD: JB	

FILE NAME: L:\330054.104Batavia\dwg\TASK104BASE2006.dwg

FIGURE
2

REV -
Dec/04/2006

Figure 3 - Mapped Site Features 2006

LEGEND

Monitoring Area Limits

Wetland Boundary

Vegetation Community Boundary

Open Water 2006

Base Photograph Date: July 07, 2006

Scale 1"= 250ft

Net Wetland Area Within Monitoring Limits:

Wetland "A"	1.033 Acres
Wetland "B"	0.60 Acres
Wetland "C"	0.92 Acres
Wetland "D"	2.99 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/Typha latifolia
5. Agropyron smithii/Potentilla anserina
6. Ceratophyllum demersum
7. Eleocharis palustris

3'Fringe

MONITORING AREA LIMITS

Upland

OW

Wetland "A"

MONITORING AREA LIMITS

Wetland "B"

4'Fringe

3'Fringe

OW

Upland

OW

Wetland "C"

MONITORING AREA LIMITS

Wetland "D"

3'Fringe

OW

Upland

MONITORING AREA LIMITS

MONITORING AREA LIMITS

3'Fringe

PROJECT NAME
MDT Batavia Wetland Mitigation

DRAWING TITLE
Mapped Site Features 2006

DRAWN: RA/LL
PROJ MGR: J.Berglund
CHECKED: APP'VD:
SCALE: 1"=250'
FILE NAME:L:\330054.104Batavia\dwg\TASK104BASE2006.dwg
PROJ NO: B33054.104
LOCATION:

PBSJ
1120 Cedar
Missoula, MT 59802

FIGURE
3
OF
REV -
Dec/11/2006

Appendix B

2006 WETLAND MITIGATION SITE MONITORING FORM
2006 BIRD SURVEY FORMS
2006 COE WETLAND DELINEATION FORMS
2006 FUNCTIONAL ASSESSMENT FORMS

MDT Wetland Mitigation Monitoring
Batavia
Kalispell, Montana

PBS&J / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **Batavia** Project Number**: B43054.00 - 0104** Assessment Date: **8/01/06**
Location: **Batavia WPA - Kalispell** MDT District: **Missoula** Milepost: _____
Legal description: T**28N** R**22W** Section **20, 21** Time of Day: **0800**
Weather Conditions: **Partly cloudy & warm - 70 degrees** Person(s) conducting the assessment: **Traxler**
Initial Evaluation Date: **7 / 12 / 01** Visit #: **9** Monitoring Year: **2006 (year 6)**
Size of evaluation area: ___ Land use surrounding wetland: **Rural Residential, Agriculture**

HYDROLOGY

Surface Water Source: **Ashley Creek, groundwater**
Inundation**:** Present **X** Absent____ Average depths: **1-2ft** Range of depths: **0 - 4** ft
Assessment area under inundation: **60%**
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 **X**
Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

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

COMMENTS/PROBLEMS:

VEGETATION COMMUNITIES: BATAVIA

Community No.:__1__ Community Title (main species):_Elymus smithii/Elymus repens____

Dominant Species	% Cover	Dominant Species	% Cover
Elymus smithii	25	Centaurea maculosa	15
Elymus cinereus	5	Achillea millefolium	5
Koeleria macrantha	3	Elymus repens	25
Cirsium arvense	10	Aster ascendens	20
Poa pratensis	10	Poa juncifolia	10

COMMENTS/PROBLEMS: __Significant weed infestation in disturbed upland area adjacent to Wetland "A" – primarily thistle and spotted knapweed.

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

COMMENTS/PROBLEMS: _____

_____

_____

_____

PLANTED WOODY VEGETATION SURVIVAL

Species	Number Originally Planted	Number Observed	Mortality Causes
NA			

COMMENTS/PROBLEMS:

No plantings at this site, just reseeding of disturbed areas by DU.

WILDLIFE

BIRDS

(Attach Bird Survey Field Forms)

Were man made nesting structures installed? Yes ___ No __XX__ Type:_____ How many? _____ Are the nesting structures being utilized? Yes ___ No ___ Do the nesting structures need repairs? Yes __ No___

MAMMALS AND HERPTILES

Species	Number Observed	Indirect indication of use			
		Tracks	Scat	Burrows	Other
white-tailed deer	0	yes	yes		
coyote	0	yes	yes		
striped skunk	0	yes			
raccoon	0	yes			

Additional Activities Checklist:

__NA__Macroinvertebrate sampling (if required)

COMMENTS/PROBLEMS:

PHOTOGRAPHS

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

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

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. Each of these photo points were taken again in 2006.

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 2006.

WETLAND DELINEATION

(Attach Corps of Engineers delineation forms)

At each site conduct the items on the checklist below:
__X___Delineate wetlands according to the 1987 Army Corps manual.
__X__ Delineate wetland-upland boundary on the air photo
__NA_ Survey wetland-upland boundary with a resource grade GPS survey

COMMENTS/PROBLEMS: _See attached completed delineation forms._____

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.**_____

MAINTENANCE

Were man-made nesting structures installed at this site? YES__ NO__**X**__
If yes, do they need to be repaired? YES ____ NO___
If yes, describe problems below and indicate if any actions were taken to remedy the problems.

Were man-made structures built or installed to impound water or control water flow into or out of the wetland? YES_**X**__ NO____
If yes, are the structures working properly and in good working order? YES __**X**_ 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.

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Batavia: Wetland D Date: 8/01/06 Examiner: Traxler Transect # 1

Approx. transect length: 318 feet Compass Direction from Start (Upland):

Vegetation type A:	**ELE REP / ELE SMI**	
Length of transect in this type:	3	feet
Elymus repens	4	
Achillea millefolium	+	
Elymus smithii	2	
Total Vegetative Cover:	60%	

Vegetation type B:	**Type 7 ELE PAL**	
Length of transect in this type:	60	feet
Eleocharis palustris	5	
Total Vegetative Cover:		

Vegetation type C:	Open Water	
Length of transect in this type:	252	feet
Total Vegetative Cover:		

Vegetation type D:	Type 2 Hordeum/Eleocharis	
Length of transect in this type:	3	feet
Eleocharis palustris	4	
Hordeum Jubatum	3	
Total Vegetative Cover:	50%	

MDT WETLAND MONITORING – VEGETATION TRANSECT (back of form)

Cover Estimate

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

Indicator Class:

+ = Obligate
- = Facultative/Wet
0 = Facultative

Source:

P = Planted
V = Volunteer

Percent of perimeter _____ % developing wetland vegetation – excluding dam/berm structures.

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

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

Notes:

Much of the vegetation transect was excavated in the spring of 2005 and converted to shallow open water. The perimeter of the excavated area began to establish Type 2 vegetation - approximately 3' fringe around open water.

3/01 rev

PBSJ

BIRD SURVEY – FIELD DATA SHEET

Page 1 of 1
Date: 5/2/06

SITE: Batavia

Survey Time: 1800

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
American Bittern	1	F	MA				
American Coot	13	F, L	MA, OW				
American Gadwall	2	F, L, BP	MA, OW				
Bufflehead	2	BP, F					
Canada Goose	15+	N,L	MA				
Cinnamon Teal	4	F, L	MA, OW				
Cliff Swallow	11	F	MA, OW				
Common Raven	1	FO					
Great Blue Heron	1	FO					
Killdeer	1	F	MA				
Magpie	1	FO					
Mallard	3	L,N,F	OW, MA				
Northern Harrier	1	F	MA				
Northern Shoveler	2	B, L	OW, MA				
Red-winged Blackbird	6	N,BP	MA				
Ring-necked duck	3	L, F	OW, MA				
Sandhill Crane	5	F	MA				
Three-toed Woodpecker	1	F	UP				
Yellow-headed blackbird	>20	N,BP	MA				

Notes: Conditions: Mostly Cloudy and windy, approximately 55 degrees.
Geese with 6 young
Coyote, deer, skunk, and raccoon tracks.

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

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

BIRD SURVEY – FIELD DATA SHEET

Page 1 of 1
Date: 8/1/06

SITE: Batavia

Survey Time: 0800

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
Blue-winged Teal	2	L	OW, MA				
Canada Goose	8	L	MA				
Cliff Swallow	8	F	MA				
Common Snipe	3	F	MA				
European Starling	50+	L, F	UP				
Mallard	5	L	OW, MA				
Northern Flicker	2	F	UP				
Northern Harrier	1	F	UP				
Redhead	2	L	OW, MA				
Red-winged Blackbird	6	L	MA				
Ring-necked Pheasant	1	F	UP				
Rock Dove	3	FO					
Sandhill Crane	2	F	MA				
Song Sparrow	6	L	SS				
Tree Swallow	3	F	SS,MA,				
Unidentified Waterfowl	30+	L, F	OW, MA				
Yellow-headed Blackbird	5	L	MA				

Notes: Temperatures in low 70's.

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

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

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

Project / Site: **Batavia WPA**	Date: **August 1, 2006**
Applicant / Owner: **MDT**	County: **Flathead**
Investigator: **PBSJ - Traxler**	State: **Montana**

Do Normal Circumstances exist on the site? **Yes** Is the site significantly disturbed (Atypical Situation)? **No** Is the area a potential Problem Area? **No** (If needed, explain on reverse side)	Community ID: **Upland** Transect ID: _____ Plot ID: **1**

VEGETATION (USFWS Region 9: Northwest)

Dominant Species	Stratum	Indicator	Dominant Species	Stratum	Indicator
1. *Agropyron repens*	Herb	FACU	11.		
2. *Poa pratensis*	Herb	FACU+	12.		
3. *Achellia millefolium*	Herb	FACU	13.		
4. *Distichlis apicata*	Herb	FAC+	14.		
5. *Agropyron smithii*	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-): **1** / **5** = **20**%			FAC Neutral: **0** / **4** = **0**%		
Remarks: **Upland plot between Wetlands B & C.**					

HYDROLOGY

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

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**

Profile Description

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

Hydric Soil Indicators:

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

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **NO**
Wetland Hydrology Present? **NO**
Hydric Soils Present? **NO**

Is this Sampling Point within a Wetland? **NO**

Remarks: **Much of this area was disturbed in 2005 when dredged material was placed here. Plot was maintained in undisturbed area.**

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

Project / Site: **Batavia WPA**	Date: **August 1, 2006**
Applicant / Owner: **MDT**	County: **Flathead**
Investigator: **PBSJ - Traxler**	State: **Montana**

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

VEGETATION (USFWS Region 9: Northwest)

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

HYDROLOGY

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

Profile Description

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

Hydric Soil Indicators:

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

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **YES** Wetland Hydrology Present? **YES** Hydric Soils Present? **YES**	Is this Sampling Point within a Wetland? **YES**

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

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

1. Project Name: Batavia Waterfowl Production Area **2. Project #:** B43054.00.0104 **Control #:** _____

3. Evaluation Date: 8/1/2006 **4. Evaluator(s):** Traxler **5. Wetland / Site #(s):** Batavia WPA

6. Wetland Location(s) i. T: 28 N **R:** 22 W **S:** 20, 21 **T:** __ N **R:** __ E **S:** _____

ii. Approx. Stationing / Mileposts: _____

iii. Watershed: 4 - Flathead **GPS Reference No. (if applies):** _____

Other Location Information: Smith Valley, 5 miles SW of Kalispell

7. A. Evaluating Agency MDT

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

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

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

Comments: _____

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA

HGM CLASS [1]	SYSTEM [2]	SUBSYSTEM [2]	CLASS [2]	WATER REGIME [2]	MODIFIER [2]	% OF AA
Riverine	Palustrine	None	Emergent Wetland	Permanently Flooded	---	25
Riverine	Palustrine	---	Emergent Wetland	Semipermanently Flooded	Excavated	50
Riverine	Palustrine	---	Scrub-Shrub Wetland	Semipermanently Flooded	---	20
Riverine	Palustrine	---	Aquatic Bed	Intermittently Exposed	---	5

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

Comments: _____

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

12. GENERAL CONDITION OF AA

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

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

Comments: (types of disturbance, intensity, season, etc.) aside from wetland construction activities, site is relative undisturbed.

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

iii. Briefly describe AA and surrounding land use / habitat: AA is within a waterfowl production area and is closed to public use during the nesting season. Surrounding land use is rural undeveloped land and low density housing.

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

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

Comments: _____

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

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

Evidence of Wildlife Use from 14C(i)	**Wildlife Habitat Features Rating** from 14C(ii)			
	☒ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **Low**
Substantial	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	☒**Permanent/Perennial**			☐**Seasonal / Intermittent**			☐**Temporary / Ephemeral**		
Cover - % of waterbody in AA containing cover objects (*e.g.* submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation)	**>25%**	**10-25%**	**<10%**	**>25%**	**10-25%**	**<10%**	**>25%**	**10-25%**	**<10%**
Shading - >75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities	--	--	--	--	--	--	--	--	--
Shading – 50 to 75% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	--	--	--	--	--	--	--
Shading - < 50% of streambank or shoreline of AA contains riparian or wetland scrub-shrub or forested communities.	--	--	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)			
	☐ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **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	☒ **≥ 10 acres**			☐ **<10, >2 acres**			☐ **≤2 acres**		
% of flooded wetland classified as forested, scrub/shrub, or both	**75%**	**25-75%**	**<25%**	**75%**	**25-75%**	**<25%**	**75%**	**25-75%**	**<25%**
AA contains **no outlet or restricted outlet**	--	--	.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**.**	☒ **>5 acre feet**			☐ **<5, >1 acre feet**			☐ **≤1 acre foot**		
Duration of surface water at wetlands within the AA	**P/P**	**S/I**	**T/E**	**P/P**	**S/I**	**T/E**	**P/P**	**S/I**	**T/E**
Wetlands in AA flood or pond **≥ 5 out of 10 years**	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.			
% cover of wetland vegetation in AA	☒ **≥ 70%**		☐ **< 70%**		☐ **≥ 70%**		☐ **< 70%**	
Evidence of flooding or ponding in AA	☒ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**	☐ **Yes**	☐ **No**
AA contains **no or restricted outlet**	1 (H)	--	--	--	--	--	--	--
AA contains **unrestricted outlet**	--	--	--	--	--	--	--	--

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

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

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

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

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	☐ Permanent / Perennial	☒ Seasonal / Intermittent	☐ Temporary / Ephemeral
≥ 65 %	--	.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	☒ Vegetated component >5 acres						☐ Vegetated component 1-5 acres						☐ Vegetated component <1 acre					
B	☒ High		☐ Moderate		☐ Low		☐ High		☐ Moderate		☐ Low		☐ High		☐ Moderate		☐ Low	
C	☒Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N	☐Y	☐N
P/P	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	.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.		
Estimated Relative Abundance from 11	☐rare	☐common	☐abundant	☐rare	☒common	☐abundant	☐rare	☐common	☐abundant
Low disturbance at AA (12i)	--	--	--	--	.6M	--	--	--	--
Moderate disturbance at AA (12i)	--	--	--	--	--	--	--	--	--
High disturbance at AA (12i)	--	--	--	--	--	--	--	--	--

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL

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

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

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

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

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

Ownership	Disturbance at AA from 12(i)		
	☒ Low	☐ Moderate	☐ High
Public ownership	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	
	Total:	**9.60**	**12.00**	1325.00
	Percent of Total Possible Points:		**80%** (Actual / Possible) x 100 [rd to nearest whole #]	

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

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

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

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

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

☐ **I** ☒ **II** ☐ **III** ☐ **IV**

Appendix C

2006 REPRESENTATIVE PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
Batavia
Kalispell, Montana

2006 BATAVIA WETLAND MITIGATION SITE

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 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.

2006 BATAVIA WETLAND MITIGATION SITE

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. Transect excavated in 2005 – primarily OW.

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

Photo Point No. 7: View looking SW into Wetland B.

Appendix D

BIRD SURVEY PROTOCOL
GPS PROTOCOL

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.