MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2002

Batavia
Kalispell, Montana

Prepared for:

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

Prepared by:

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

February 2003

Project No: 130091.006

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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 (**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.

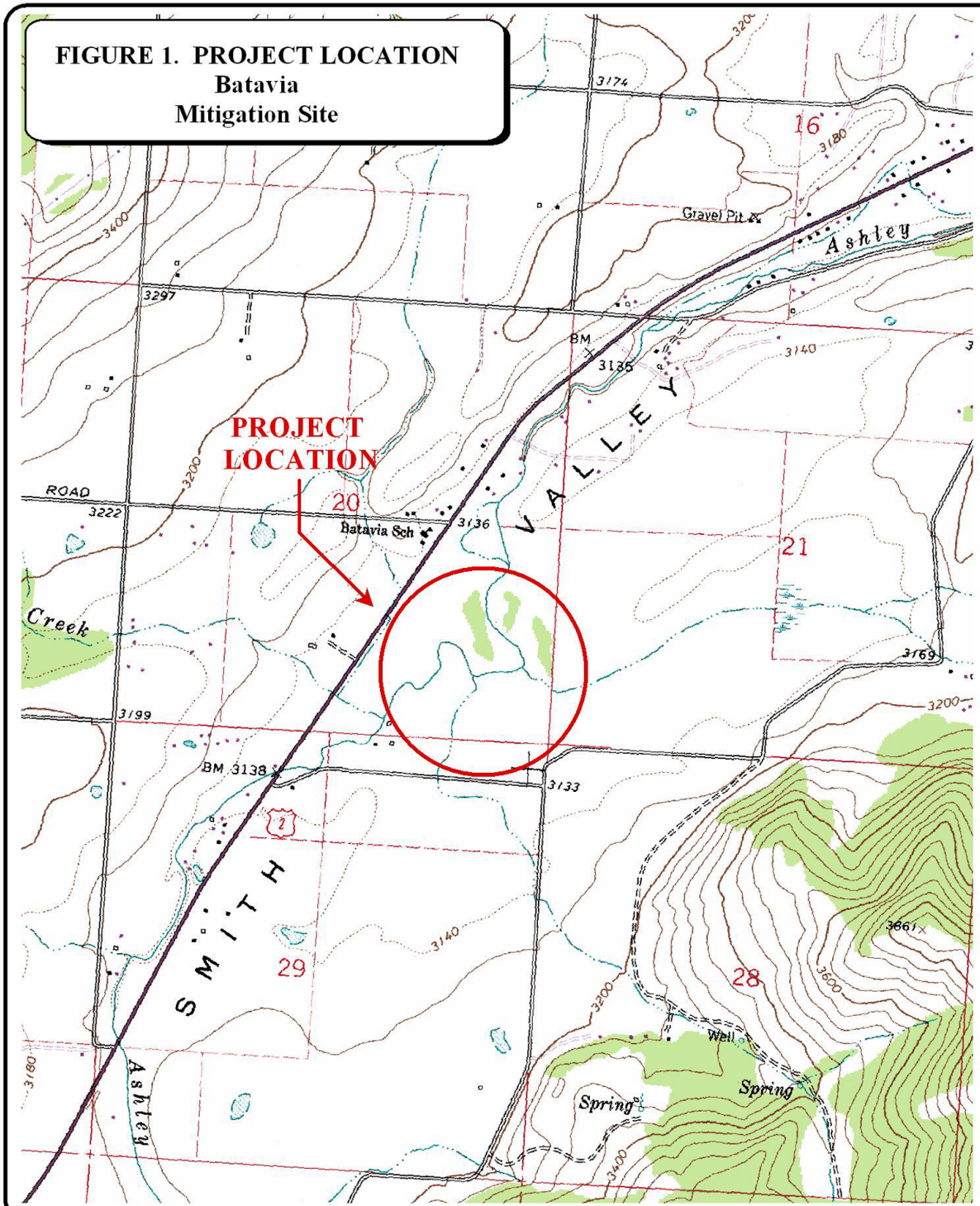
The entire WPA is influenced by a high groundwater table and by surface water diverted out of nearby Ashley Creek. Over time, the existing dike structure and water delivery system became degraded to a point where the dike was no longer holding water at the desired elevation. The intent of the project 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.

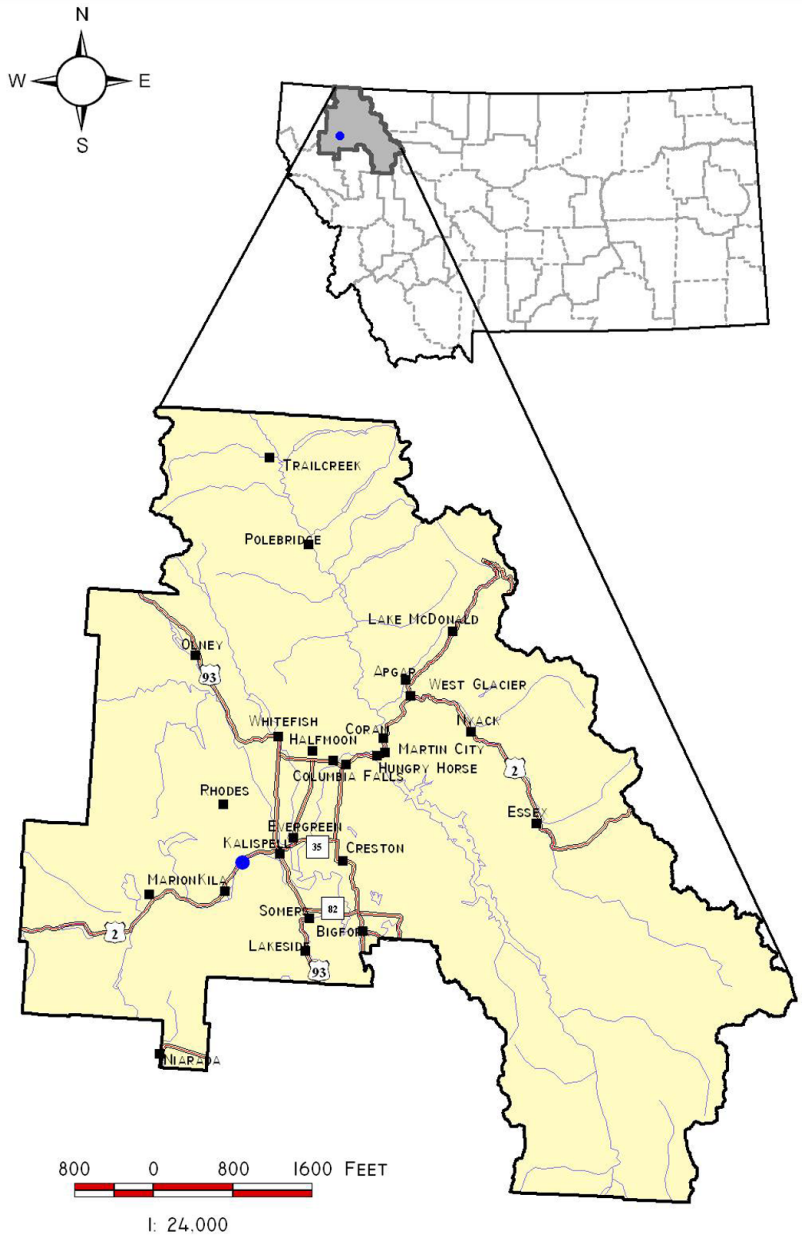
According to MDT project files, mitigation credits were determined by assigning credit ratios for creation and enhancement across the entire site. A total of 28.72 acres of credit was agreed upon by MDT, the USFWS, and Army Corps of Engineers (COE), with the potential for an additional 6.8 acres to be 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 =	10.0 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 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, 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.

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.

1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

2.0 METHODS

2.1 Monitoring Dates and Activities

This is the second consecutive monitoring year, and the site was visited on August 11, (mid-season) 2002. 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; GPS data 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 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 was 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 routine wetland delineation data 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 evaluated for the second time **Figure 2 (Appendix A)**. Percent cover was estimated for each vegetative species encountered within the "belt" using the following values: + (<1%); 1 (1-5%); 2 (6-10%); 3 (11-20%); 4 (21-50%); and 5 (>50%). 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. Photos along the transect were taken from both ends during the mid-season visit.

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 this 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 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 in 2002. 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 the monitoring visit. 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. 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. An abbreviated field data sheet for the 1999 MDT Montana Wetland Assessment Method was compiled to facilitate rapid collection of field information (**Appendix B**). The remainder of the functional assessment was completed in the office and is compared to the 2001 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 photograph point location was recorded with a resource grade GPS in 2001. The location of photo points is shown on **Figure 2**, **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 2002.

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 2002 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 found in MDT files indicate that maximum water elevations prior to construction of the new dike were 3126.2, with wetland habitat delineated up to elevation 3127. The newly proposed dike and water delivery system was 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.

For various reasons, it appears as though the desired full pool elevation of 3128.5 has never been met at this site. Possible reasons include extended drought conditions in the Flathead Valley, water control structures originally set at the wrong elevations, and possible interruption of water delivery from Ashley Creek by local landowners. Drought conditions in the Flathead Valley are likely having the greatest influence on water levels at Batavia. According to the Western Regional Climate Center, Kalispell yearly precipitation totals for 2000 (10.5 inches) and 2001 (12.47 inches) were 66 and 79 percent, respectively, of the total annual mean precipitation (15.81 inches) in this area. Data for 2002 is not yet available, however, according to NOAA precipitation records for the Kalispell area, 11.00 inches of precipitation had been received as of October 31, 2002. Precipitation for 2002 appears to be similar to 2001; approximately 79 percent of the historic mean. Lower than average groundwater levels and the inability of the U.S. Fish & Wildlife Service (USFWS) to divert water from Ashley Creek while still maintaining minimum in-stream flows are thought to be the primary reasons for the site not reaching its full potential.

Another possible reason for the site not reaching full pool is due to interruption of water delivery from Ashley Creek by local landowners. Though not confirmed, it is thought that one or more landowners are responsible for pulling boards out of the instream flow diversion on Ashley Creek. Adjacent landowners are perhaps motivated to do so by concern that their own property will be flooded by raising the water table on the WPA and/or that they will not receive their full water right allotment from Ashley Creek.

During field investigations, the pond area in Wetland D was inundated, although below drift lines observed on the mud flat. The depressional areas at Wetlands B and C were slightly inundated, whereas in 2001, these areas were dry. Wetland A displayed saturated soil conditions, but was not inundated (see **Figure 3**, **Appendix A**). Designed open water areas surrounding the numerous small islands in both cells contained water, but at low levels.

3.2 Vegetation

Vegetation species identified on the site within Wetland D are presented in **Table 1** and on the attached data form. Six community types were identified and mapped on the mitigation area (**Figure 3**, **Appendix A**). These 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*, and Type 6: *Ceratophyllum demersum*. Dominant species within each of these communities are listed on the attached data form (**Appendix B**).

Table 1: ***2001/2002 Batavia Vegetation Species List***

Species	Region 9 (Northwest) Wetland Indicator	Observed in 2001	Observed in 2002
Achillea millefolium	FACU	X	X
Agropyron smithii	FACU	X	X
Agropyron repens	FAC-	X	X
Agrostis alba	FAC	X	X
Alisma plantago-aquatica	OBL	X	X
Alopecurus pratensis	FACW	X	X
Antennaria spp.	--	X	X
Aster hesperius	OBL	X	X
Carex diandra	OBL	X	X
Carex parryana	FAC+	X	X
Carduus nutans	(Stat us NX)	X	X
Ceratophyllum demersum	OBL	X	X
Chenopodium album	FAC	X	X
Cirsium arvense	FACU+	X	X
Cirsium vulgare	FACU	X	X
Cynoglossum officinale	FACU	X	
Deschampsia cespitosa	FACW	X	X
Distichlis stricta	FAC+	X	X
Eleocharis palustris	OBL	X	X
Elymus cinereus	FAC	X	X
Epilobium watsonii	FACW	X	X
Erigeron lonchophyllus	FACW	X	
Gnaphalium palustre	FAC+	X	
Hippuris vulgaris	OBL	X	X
Hordeum jubatum	FAC	X	X
Juncus balticus	FACW+	X	X
Juncus castaneus	FACW	X	X
Juncus nevadensis	FACW	X	
Koeleria cristata	--	X	X
Lotus corniculatus	FAC	X	X
Melilotus alba	FACU	X	X
Melilotus officinalis	FACU	X	X
Mentha arvensis	FACW-	X	X
Monolepis nuttalliana	FAC-	X	
Muhlenbergia asperifolia	FACW	X	X
Phalaris arundinacea	FACW	X	X
Phleum pratense	FAC-	X	X
Poa juncifolia	FACU+	X	X
Poa pratensis	FAC	X	X
Polygonum amphibium	OBL	X	X
Polypogon monspeliensis	FACW	X	X
Potamogeton natans	OBL	X	X
Potentilla anserine	OBL	X	X
Puccinellia nuttalliana	OBL	X	X
Ranunculus cymbalaria	OBL	X	
Rumex crispus	FAC+	X	
Scirpus acutu s	OBL	X	X
Sisymbrium altissimum	--	X	X
Sisyrinchium angustifolium	FACW-	X	
Smilacina stellata	--	X	X
Spartina gracilis	FACW	X	X
Stachys palustris	FACW+	X	X
Taraxacum officinale	FACU	X	X
Tragopogon dubius	--	X	X
Triglochin maritimum	OBL	X	X
Typha latifolia	OBL	X	X

Type 1 occurs in the upland southeast of the mudflat and consists of upland grasses dominated by *Agropyron smithii*, and accompanied by *Elymus cinereus*, *Koeleria cristata*, *Spartina gracilis*, and *Agropyron repens*. Type 2 is present on the mud flat and consists primarily of *Hordeum jubatum*, *Eleocharis palustris* and *Puccinellia nuttalliana*. Type 3 is present west of the mudflat and 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*.

The vegetation transect results are detailed in the attached data form, and are summarized graphically below. The transect begins in the upland above the mudflat and extends to the water crossing four vegetation communities.

VT 2001 Start	***Type 1 Upland (68')***	***Type 2 (171')***	***Type 3 (110')***	***Type 4 (10')***	**Total: 318'**	**VT End**
VT 2002 Start	***Type 1 Upland (61')***	***Type 2 (190')***	***Type 3 (55')***	***Type 4 (9')***	**Total: 315'**	**VT End**

The vegetation transect described in 2002 is similar to the previous year; however, a 20-foot expansion of Type 2 vegetation (*Hordeum jubatum/Eleocharis palustris*) was observed. The Type 3 vegetation community (*Eleocharis palustris*) retreated by approximately 50-feet. This vegetative change is probably due to drought conditions causing *Hordeum jubatum* (facultative status), to infringe on the *Eleocharis palustris* (obligate status).

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 were present in the main cells but were not found within the 2001 monitoring area. Three observation points were located on the shoulder of the main cell along the vegetation transect and displayed drier characteristics. The test pits (TP) were excavated and described using the COE routine wetland monitoring form. TP1 located along the vegetation transect in the upland consisted of a silt loam (10YR 3/2) in the A Horizon overlying a silty clay loam (10YR 7/1) in the B Horizon. No hydric characteristics were observed. TP2 was located in the mudflat along the vegetation transect. Hydric soil characteristics were marginally developed. A low-chroma (10YR 3/1) silt loam A-horizon was present from 1 to 2-inches and overlies a B-Horizon consisting of a mottled silty clay loam. These soil characteristics indicated an oxygen-depleted environment with a fluctuating water table. TP3 was located near the water and showed hydric characteristics well developed in a remnant upland soil. The A-Horizon consisted of a silty loam (10YR 2/1). The B-Horizon consisted of a silty

clay loam (10YR 7/1) with many highly contrasting mottles (2.5YR 5/6). No changes in the soil profile were observed in the 2002 monitoring season.

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 three 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 2001. Wetland boundaries for Wetland B and Wetland C were drawn differently in 2002. The change is not due to wetland development, but due to vegetation patterns that were more clearly visible during the August 11, 2002 site visit than during the August 25, 2001 visit when site conditions were very dry and most seed heads were absent.

In order to determine the acreage of wetland creation in the three monitoring areas, the original pre-project wetland delineation was overlaid onto the 2001 delineation for direct comparison and then updated based on 2002 acreages. 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. The borrow area in this monitoring site has clearly not established any wetland characteristics. Further comparison of the pre and post-project delineations show a gain of 0.50 acre at Wetland B, 0.69 acre at Wetland C, and 0.54 acre at Wetland D. Total wetland creation for the four wetlands is 1.73 acres. Due to the very low water elevations on the site, the results of the delineation were to be expected.

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.

3.5 Wildlife

Wildlife species, or evidence of wildlife, observed on the site during 2002 monitoring efforts are listed in **Table 2**. Specific evidence observed, as well as activity codes pertaining to birds, is provided on the completed monitoring form in **Appendix B**. Three mammal and numerous bird species have been noted using the mitigation site. Observations in 2002 were similar to 2001.

3.6 Macroinvertebrates

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

Table 2: ***Fish and Wildlife Species Observed at the Batavia Mitigation Site***

FISH None	
AMPHIBIANS None	
REPTILES None	
BIRDS[1] **Canada Goose (*Branta canadensis*) *Great Blue Heron (*Ardea herodias*)	*Killdeer (*Charadrius vociferous*) **Osprey (*Pandion haliaetus*) *Sandhill Crane (*Grus canadensis*)
MAMMALS *Coyote (*Canis latrans*) *Weasel (*Mustela spp.*) *Deer (*Odocoileus spp.*)	

[1] The bird list consists of species observed during the 2001 & 2002 monitoring seasons and is not inclusive of birds observed at the WPA and documented by the USFWS (136 species). A complete bird list is provided in Appendix B with the field data forms.
*Denotes observed in 2002 and previous monitoring events
**Denotes observed in 2002 for the first time

3.7 Functional Assessment

The completed functional assessment form is presented in **Appendix B**. Functional assessment results are summarized in **Table 3**. 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 and black terns), 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 2001.

Incorrect ratings on the original functional assessment for MNHP species habitat and groundwater recharge/discharge likely resulted in a lower percent of possible points attributed to the site at that time. Overall, the site has changed little in the way of functional assessment since completion of the project.

3.8 Photographs

Representative photos taken from photo-points and transect ends are provided in **Appendix C** in addition to the 2002 MDT aerial photograph.

Table 3: ***Summary of 2002 Wetland Function/Value Ratings and Functional Points [1] at the Batavia Mitigation Project***

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	Evaluation Year	
	1996 Baseline Assessment[2]	2002 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 (01.0)
Sediment, Nutrient, Toxicant Removal	High (1.0)	High (01.0)
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	137 ac (north and south cells)	138.73 ac (north and south cells)
Functional Units (acreage x actual points)	1069	1332
Net Acreage Gain	NA	1.73 ac
Net Functional Unit Gain	NA	263
Total Functional Unit "Gain"	NA	263

[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)

3.9 Maintenance Needs/Recommendations

The berm and associated water control structures were in good condition during the mid-season visits.

In order for this site to reach its full potential, it is critical that the designed water elevation of 3128.5 be attained, especially during the spring and early growing season. During years of average or above average runoff, enough water should be available to successfully recharge the site through diversion out of Ashley Creek. As managers of the Batavia WPA, it would seem that the USFWS would be responsible for this management activity. It is recommended that MDT discuss this issue with the USFWS. Discussions with adjacent landowners who might have water concerns with respect to this site should also be conducted by MDT and/or the USFWS.

After documenting two consecutive years of full recharge into the site (water level to 3128.5), it is recommended that the entire site be delineated to determine overall success of the project.

In order to document a better representation of wildlife use of the Batavia WPA, it is recommended that the site be monitored during the springtime at least once over the course of the monitoring contract. At this time, no spring visits have been proposed for the site.

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 =	10.0 acres
Total =	28.72 acres

To date, it appears as though little wetland habitat has been created either in the borrow areas (1.73 acres) or around the periphery of the site. Lack of water is the primary influencing factor. The site was constructed in 1998 and the area has received normal or below normal precipitation since that time. According to the USNRCS surface water supply index (SWSI) published by NRIS for the year 2001, the Stillwater/Whitefish Rivers had an SWSI Value of –4.0, which corresponds to extremely dry conditions. SWSI Values in 2000 and 1999 were –2.9 (moderately dry) and 0.5 (near average), respectively. A SWSI has not yet been calculated for 2002, however year-to-date precipitation values for 2002 are below average. Water for the Batavia site is dependent upon surface water from Ashley Creek and groundwater recharge. It is expected that developing wetland area may be delayed due to the low water-table conditions.

To a certain extent, minor enhancement of the existing wetlands in the north and south cells has likely occurred through the creation of more open water habitat around the many small islands. 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 further enhanced with increased water levels across the site, and would also provide a stronger basis for documentation/quantification of enhancement credit.

4.0 REFERENCES

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Appendix A

FIGURES 2 & 3

MDT Wetland Mitigation Monitoring
Batavia
Kalispell, Montana

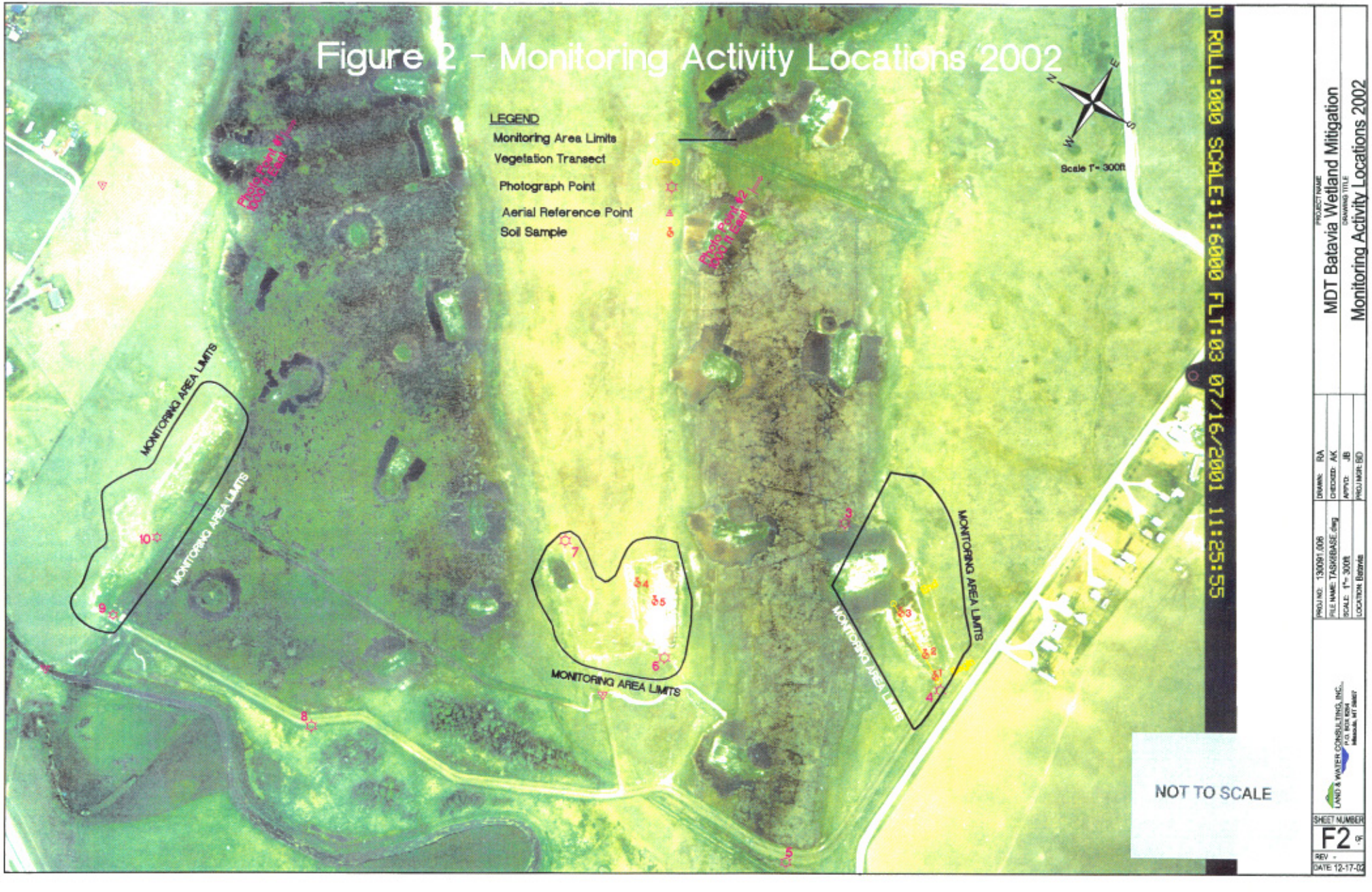
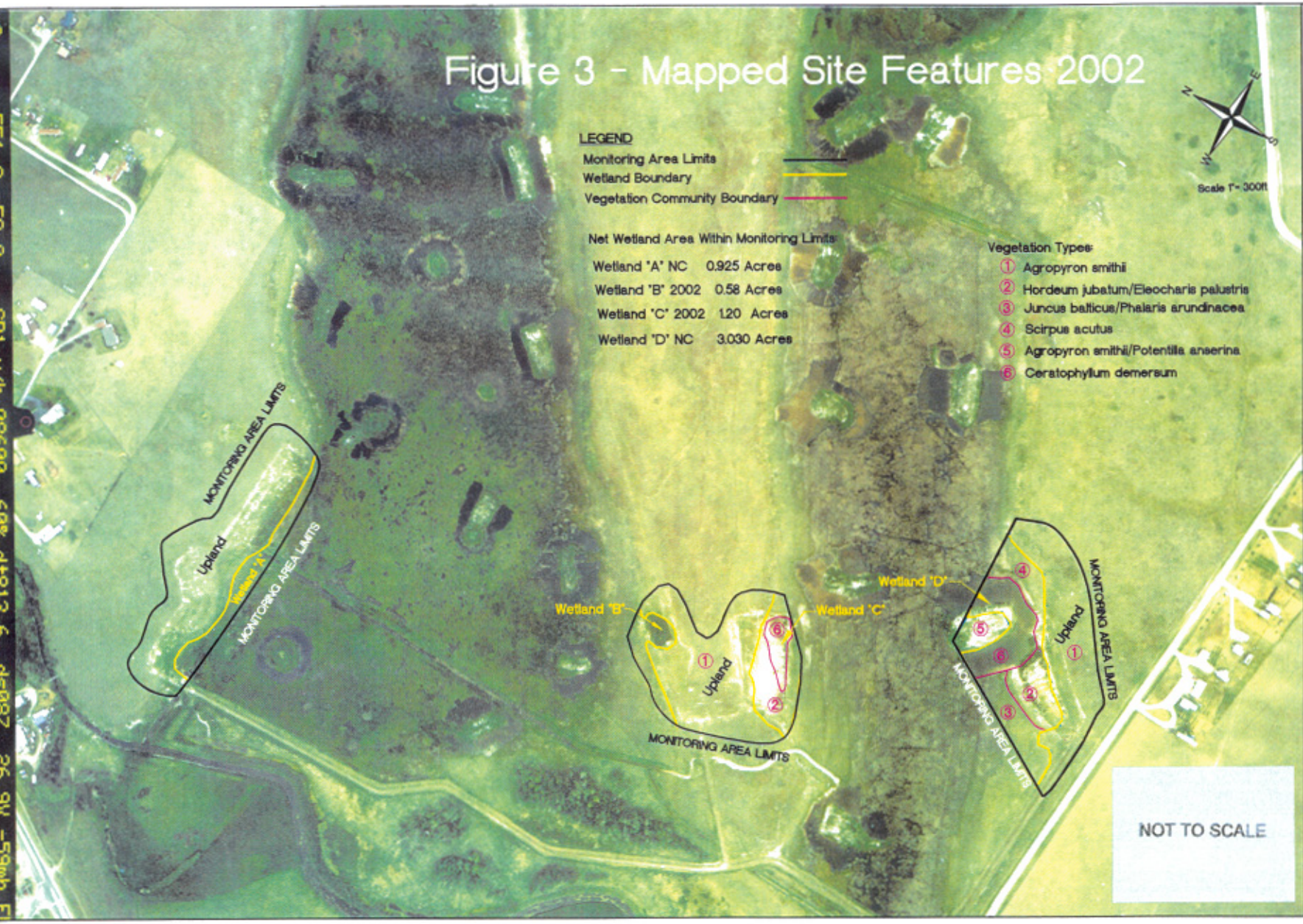


Figure 2 - Monitoring Activity Locations 2002
LEGEND
Monitoring Area Limits
Vegetation Transect
Photograph Point
Aerial Reference Point
Soil Sample
Photo Point #1 600 ft East
Photo Point #2 300 ft East
Scale 1" = 300ft
MONITORING AREA LIMITS
MONITORING AREA LIMITS
MONITORING AREA LIMITS
MONITORING AREA LIMITS
MONITORING AREA LIMITS
NOT TO SCALE
D ROLL:000 SCALE:1:6000 FLT:03 07/16/2001 11:25:55
PROJECT NAME
MDT Batavia Wetland Mitigation
DRAWING TITLE
Monitoring Activity Locations 2002
PROJ NO: 130091.006
FILE NAME: TASK/BASE.dwg
SCALE: 1" = 300ft
LOCATION: Batavia
DRAWN: RA
CHECKED: AK
APPV'D: JB
PROJ MGR: BD
LAND & WATER CONSULTING, INC.
P.O. BOX 8294
Missoula, MT 59807
SHEET NUMBER
F2
REV -
DATE 12-17-02

Figure 3 - Mapped Site Features 2002



PROJECT NAME
MDT Batavia Wetland Mitigation
DRAWING TITLE
Mapped Site Features 2002

DRAWN: RA
CHECKED:
APPVD: BID
PROJ MGR: BID

PROJ NO: 1300051.006
FILE NAME: TASKBASE.dwg
SCALE: 1"= 300ft
LOCATION: Batavia

LAND & WATER CONSULTING, INC.
P.O. BOX 1024
Batavia, MT 59007

SHEET NUMBER
3 OF
REV -
DATE: 12-17-02

.0 FF1.0 EC 0 SP1 v/h.08600 60% dt813.6 ds087 26.9V -59mb E

Appendix B

COMPLETED 2002 WETLAND MITIGATION SITE MONITORING FORM
COMPLETED 2002 BIRD SURVEY FORMS
COMPLETED 2002 WETLAND DELINEATION FORMS
COMPLETED 2002 FIELD AND FULL FUNCTIONAL ASSESSMENT FORMS

MDT Wetland Mitigation Monitoring
Batavia
Kalispell, Montana

LAND & WATER

LAND & WATER B-1

DRAFT - MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Batavia Project Number: 130091.006 Assessment Date: 8 / 11 / 02
Location: Batavia WPA MDT District: _____ Milepost: _____
Legal description: T 28N R 22W Section 20, 21 Time of Day: 09:00
Weather Conditions: overcast, 70's Person(s) conducting the assessment: A. Kuhle, J. Asbrook
Initial Evaluation Date: 7 / 12 / 01 Visit #: 2 Monitoring Year: 2
Size of assessment area: _____ acres Land use surrounding wetland: urban / ag

HYDROLOGY

· CELL A

Surface Water

Inundation: Present X Absent ____ Average depths: 1-2 ft Range of depths: 0 - 4 ft
Assessment area under inundation: 15 %
Depth at ~~emergent~~ rooted vegetation-open water boundary: ____ ft - ~~em~~ rooted throughout
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.): _____

Groundwater

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

Well #	Depth	Well #	Depth	Well #	Depth

Additional Activities Checklist:

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

COMMENTS/PROBLEMS: _____

VEGETATION COMMUNITIES: BATAVIA 2002

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 2002

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		
Potamageton natans	5		
Scirpus acutus	5		
Eleocharis palustris			
Potamageton pectinatus	1		

COMMENTS/PROBLEMS: _____

Additional Activities Checklist:

____Record and map vegetative communities on air photo

COMPREHENSIVE VEGETATION LIST Batavia 2002 LAND & WATER B-4

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
Koeleria macrantha	1	Ceratophyllum demersum	2,6
Juncus balticus	1,2,3,4,5,6	Antennaria rosea	1
Elymus repens	1,2,3	Deschampsia cespitosa	2,3,5
Tragopogon dubius	1	Polypogon monspeliensis	2
Hordeum jubatum	1,2,3,5	Aster ascendens	1,2,3,5
Phleum pratense	1	Festuca campestris	1
Smilacina stellata	5	Lactuca serriola	2
Eleocharis palustris	2,5,6	Muhlenbergia asperifolia	3
Puccinellia nuttalliana	1,2,3	Stachys palustris	3
Spartina gracilis	1,2,3	Carex lasiocarpa	3,4
Typha latifolia	2	Sium suave	4,6
Elymus smithii	1,2,3,5	Potamageton pectinatus	6
Aster hesperius	1,5	Sonchus asper	5
Potentilla anserina	2,3,4,5	Poa juncifolia	1
Phalaris arundinacea	2,3,4,5	Juncus nodosus	4
Scirpus acutus	2,4,5,6	Carex diandra	3,4
Alisma plantago-aquatica	2,6		
Hippuris vulgaris	6		
Agrostis stolonifera	1,2,3		
Cirsium vulgare	3		
Carduus nutans	1,3,5		
Triglochin maritima	2,3,4		
Polygonum amphibiam	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		
Potamageton natans	6		
Mentha arvensis	3,4,5		

COMMENTS/PROBLEMS: _____

PLANTED WOODY VEGETATION SURVIVAL

N/A

Species	Number Originally Planted	Number Observed	Mortality Causes

COMMENTS/PROBLEMS: _____

WILDLIFE

BIRDS

Scientific Name	Common Name	Number Observed	Nesting or Breeding	Living on site	Feeding	Migrating
Ca	Canada Goose					
	Osprey					
	great blue heron					
	Sandhill cranes					

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

MAMMALS AND HERPTILES

Species	Number Observed	Indirect indication of use			
		Tracks	Scat	Burrows	Other
deer	1	X			
mustelid		X			
coyote		X			

Additional Activities Checklist:

N/A 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 Vegetation transects

Location	Photo Frame #	Photograph Description See additial page	Compass Reading
A			
B			
C			
D			
E			
F			
G			
H			

COMMENTS/PROBLEMS: _____

GPS SURVEYING

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

Checklist: 2001

2001 Jurisdictional wetland boundary
2001 4-6 landmarks recognizable on the air photo
2001 Start and end points of vegetation transect(s)
2001 Photo reference points
N/A Groundwater monitoring well locations

No new GPS points in 2002

COMMENTS/PROBLEMS: _____

Photographs - Batavia

8/11/02

(4) #19 NE
20 SW

Transect beginning - looking down #21
looking away #22

Transect end - looking up #23
looking away #24 (to water)

(3) #1 SW
#2 NE

(2) #3 SW
#4 NE

(1) #5 SW
#6 NE

(6) #7 NE
#8 SW

(7) #9 SW
#10 NE

(9) #11 E

(10) #12 E
#13 W

(8) #14 NE
#15 SW

(5) #16 NE

WETLAND DELINEATION

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
2001 Survey wetland-upland boundary with a resource grade GPS survey

COMMENTS/PROBLEMS: _____

FUNCTIONAL ASSESSMENT

Collect information to complete MDT Function and Values Assessment in the office.

See forms

COMMENTS/PROBLEMS: _____

MAINTENANCE

Were man-made nesting structures installed at this site? YES___ NO X
If yes, do they need to be repaired? YES____ NO____
If yes, describe problems below and indicate if any actions were taken to remedy the problems.

Were man-made structures build or installed to impound water or control water flow into or out of the wetland?
YES X NO____
If yes, are the structures working properly and in good working order? YES____ NO___
If no, describe the problems below.

COMMENTS/PROBLEMS: _____

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

Project/Site: Batavia	Date: 8/11/02
Applicant/Owner:	County: Flathead
Investigator: A. Kuhle, J. Aselbrook	State: MT
Do Normal Circumstances exist on the site: ✓ Yes ___ No	Community ID:
Is the site significantly disturbed (Atypical Situation)? ___ Yes ___ No	Transect ID:
Is the area a potential Problem Area?: ___ Yes ___ No (If needed, explain on reverse.)	Plot ID: SP 4 ~~5~~ upland

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Elymus repens	H	FAC-	9			
2	Poa pratensis	H	FAC	10			
3	Koeleria macrantha	H	NI	11			
4	Achillea millefolium	H	FACU	12			
5	Distichilis stricta	H	FAC+	13			
6	Elymus smithii	H	FACU	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/6 33%

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: >18 (in.)

Depth to Saturated Soil: >18 (in.)

Wetland Hydrology Indicators:

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

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

Remarks:

* mud cracks at surface in localized areas

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____

Drainage Class: _____
Field Observations Confirm Mapped Type? ____ Yes ____ No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10YR 3/2	N/A	N/A	silt loam
8-18	B	7.5YR 5/3	N/A	saw shrink; swell features in clay	silty clay loam

Hydric Soil Indicators:

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

Remarks:

WETLAND DETERMINATION

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

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

Remarks:

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

Wetland B2

Project/Site: Batavia	Date: 8/11/02
Applicant/Owner:	County: Flathead
Investigator: A. Kuhle, J. Ashbrook	State: MT
Do Normal Circumstances exist on the site: ✓ Yes ___ No	Community ID:
Is the site significantly disturbed (Atypical Situation)? ___ Yes ✓ No	Transect ID:
Is the area a potential Problem Area?: ___ Yes ✓ No (If needed, explain on reverse.)	Plot ID: B2 SP.5

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex lasiocarpa ✓	H	OBL	9			
2	Carex diandra indicated	H	OBL	10			
3	Phalaris arundinacea	H	FACW	11			
4	Deschampsia cespitosa	H	FACW	12			
5	Triglochin maritima	H	OL -	13			
6	Alopecurus pratensis	H	FACW	14			
7				15			
8				16			

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

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: >18 (in.)

Depth to Saturated Soil: >18 (in.)

Wetland Hydrology Indicators:

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

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

Remarks:

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____
Drainage Class: _____
Field Observations Confirm Mapped Type? ____ Yes ____ No

Profile Description:

Depth Inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2	O	10YR 2/1	N/A	no mottles	organic material, roots
2-6	A	10YR 2/1	N/A	no mottles	organic rich loam
6-18	B	10YR 4/1	N/A	no mottles	fine sandy loam

Hydric Soil Indicators:

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

Remarks:

WETLAND DETERMINATION

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

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

Remarks:

Draft Field Data Collection Sheet for MDT Montana Wetland Assessment Form

1. CLASSIFICATION

Cowardin Class	Estimated % of AA	Predominant Water RegiMe (CIRCLE)						
Emergent		Perm Flood	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Aquatic Bed		Perm Flood	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Moss-Lichen		Perm Flood	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Scrub-Shrub		Perm Flood	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Forested		Perm Flood	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Unconsolidated Bottom		Perm Flood	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Other:		Perm Flood	Int Exp	Sem Perm Flood	Seas Flood	Sat	Tem Flood	Int Flood
Total Estimated **% Vegetated**								

2. DISTURBANCE is: High Moderate (Low) _____

3. HYDROLOGY: Do wetlands on site pond or flood? (Y) N (if no, skip to groundwater discharge/recharge portion of this section)

Does AA contain surface or subsurface outlet? (Y) N If outlet presents, is it restricted (subsurface will always be "yes"? (Y) N

Longest duration of surface water:		Surface Water Duration and other attributes (circle)		
at any wetlands with AA		(Perm) / Peren	Seas / Entermit	Temp / Ephem
in at least 10% of AA (both wetlands and nonwetlands [deepwater, streambed..]		(Perm) / Peren	Seas / Entermit	Temp / Ephem
Where fish are or historically were present (cross out if not applicable)		~~Perm / Peren~~	~~Seas / Entermit~~	~~Temp / Ephem~~
	% of waterbody containing cover objects	>25%	10-25%	<10%
	% bank or shore with reparian or wetland shrub or forested communities	>75%	50-74%	<50%
adjacent to rooted wetland vegetation along a defined watercourse or shoreline subject to wave action (cross out if not applicable)		Perm / Peren	Seas / Entermit	Temp / Ephem
	% cover of wetland bank or shore by sp. with binding rootmasses	>65%	35-64%	<35%

Flood Attenuation: Do any wetlands on site flood as a result of in-channel or overbank flow? Y (N) (if no, go to groundwater section below)

Estimated wetland area subject to periodic flooding (acres):	≥10	2-10	<2
Estimated % of flooded wetland classified SS, FO or both:	≥75	25-74	<25

Evidence of groundwater discharge or recharge? (Y) N List: No obvious surface-water input

4. VERTEBRATES

Habitat for listed or proposed threatened, Endangered, or Montana Natural Heritage Program S1, S2, or S3 Plants or Animals:

AA is Documented (D) or Suspected (S) t contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species) D S _____

Secondary habitat (list species) D S _____

Incidental habitat (list species) D S _____

No usable habitat D S _____

(For general wildlife use, see separate form.)

Fish observations? No

5. OTHERS

Do wetlands have potential to receive excess sediments, nutrients, or toxicants? Y (N) From: _____

Potential to receive: low to moderate levels high levels

Does site contain bog, fen, warm springs, >80 year-old forested wetlands, or MNHP "S1" or "S2" plant association? Y (N)

List: _____

LAND & WATER B-15

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project Name: Batavia Waterfowl Production Area 2. Project #: 130091.006 Control #:

3. Evaluation Date: Mo. 8 Day 17 Yr. 02 4. Evaluator(s): AK 5. Wetlands/Site #(s) Batavia WPA

6. Wetland Location(s): I. Legal: T 28 (N) or S; R 22 E or (W); S 20, 21 ; T ___ N or S; R ___ E or W; S ___ ;
II. Approx. Stationing or Mileposts:

III. Watershed: GPS Reference No. (if applies):
Other Location Information: Smith Valley, 5 mi SW of Kalispell

7. a. Evaluating Agency: LWC ;
b. Purpose of Evaluation:
1. ___ Wetlands potentially affected by MDT project
2. ___ Mitigation wetlands; pre-construction
3. X Mitigation wetlands; post-construction
4. ___ Other

8. Wetland size: (total acres) 138.18 (visually estimated) ___ (measured, e.g. by GPS [if applies])

9. Assessment area: (AA, tot., ac., see instructions on determining AA) ___ (visually estimated) ___ (measured, e.g. by GPS [if applies])

10. Classification of Wetland and Aquatic Habitats in AA (HGM according to Brinson, first col.; USFWS according to Cowardin [1979], remaining cols.)

HGM Class	System	Subsystem	Class	Water Regime	Modifier	% of AA
Riverine	Palustrine	N/A	EM	H		25
"	"		EM	F	E	50
"	"		SS	F		20
"	"		AB	A		5

(Abbreviations: System: Palustrine(P)/ Subsyst.: none/ Classes: Rock Bottom (RB), Unconsolidated bottom (UB), Aquatic Bed (AB), Unconsolidated Shore (US), Moss-lichen Wetland (ML), Emergent Wetland (EM), Scrub-Shrub Wetland (SS), Forested Wetland (FO)/ System: Lacustrine (L)/, Subsyst.: Limnetic (2)/ Classes: RB, UB, AB/ Subsystem: Littoral (4)/ Classes: RB, UB, AB, US, EM/ System: Riverine (R)/ Subsyst.: Lower Perennial (2)/ Classes: RB, UB, AB, US, EM/ Subsystem: Upper Perennial (3)/ Classes: RB, UB, AB, US/ Water Regimes: Permanently Flooded (H), Intermittently Exposed (G), Semipermanently Flooded (F), Seasonally Flooded (C), Saturated (B), Temporarily Flooded (A), Intermittently Flooded (J) Modifiers: Excavated (E), Impounded (I), Diked (D), Partly Drained (PD), Farmed (F), Artificial (A) HGM Classes: Riverine, Depressional, Slope, Mineral Soil Flats, Organic Soil Flats, Lacustrine Fringe

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
(Circle one) Unknown Rare (Common) Abundant
Comments:

12. General condition of AA:
I. Regarding disturbance: (use matrix below to determine [circle] appropriate response)

Conditions within AA	Predominant conditions adjacent to (within 500 feet of) 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 natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings.	(low disturbance)	low disturbance	moderate disturbance
AA not cultivated, but moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings.	moderate disturbance	moderate disturbance	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc.): Site is relatively undisturbed
II. Prominent weedy, alien, & introduced species (including those not domesticated, feral): (list) musk thistle, canada thistle

III. Provide brief descriptive summary of AA and surrounding land use/habitat: AA is within a waterfowl production area and is closed to public use during nesting season. Surrounding land use is rural undeveloped land and low density housing.

13. Structural Diversity: (based on number of "Cowardin" *vegetated* classes present [do not include unvegetated classes], see #10 above)

# of "Cowardin" vegetated classes present in AA (see #10)	≥ 3 vegetated classes (or ≥ 2 if one is forested)	2 vegetated classes (or 1 if forested)	≤ 1 vegetated class
Rating (circle)	(High)	Moderate	Low

Comments:

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:

I. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D S	
Secondary habitat (list species)	D S	
Incidental habitat (list species)	D (S)	Gray wolf, bald eagle
No usable habitat	D S	

II. **Rating** (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus/primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	.9 (H)	.8 (M)	.7 (M)	.5 (L)	.3 (L)	0 (L)

Sources for documented use (e.g. observations, records, etc):

14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above)

I. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	(D) S	nesting black tern, forster's tern, screech owl
Secondary habitat (list species)	D S	
Incidental habitat (list species)	D S	
No usable habitat	D S	

II. **Rating** (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus/primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	.8 (H)	.7 (M)	.6 (M)	.2 (L)	.1 (L)	0 (L)

Sources for documented use (e.g. observations, records, etc.):
USFWS records (Ray Washtak)

14C. General Wildlife Habitat Rating:

I. **Evidence of overall wildlife use in the AA** (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- X observations of abundant wildlife #'s or high species diversity (during any period)
- X 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

Moderate (based on any of the following [check]):
- __ 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

Low (based on any of the following [check]):
- __ 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 the AA

II. **Wildlife habitat features** (working from top to bottom, circle appropriate AA attributes in matrix to arrive at 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 of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms].)

Structural diversity (see #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 #12i)	E	E	E	H	(E)	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

III. **Rating** (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

Evidence of wildlife use (i)	*Wildlife habitat features rating (ii)*			
	Exceptional	High	Moderate	Low
Substantial	(1 (E))	.9 (H)	.8 (H)	.7 (M)
Moderate	.9 (H)	.7 (M)	.5 (M)	.3 (L)
Minimal	.6 (M)	.4 (M)	.2 (L)	.1 (L)

Comments:

14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted ih the comments.)

I. **Habitat Quality** (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10–25%	<10%	>25%	10–25%	<10%	>25%	10–25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading – 50 to 75% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - < 50% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

II. **Modified Habitat Quality** (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E = H, H = M, M = L, L = L]). *Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or equatic life support?* Y N Modified habitat quality rating = (circle) E H M L

III. **Rating** (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

Types of fish known or suspected within AA	*Modified Habitat Quality (ii)*			
	Exceptional	High	Moderate	Low
Native game fish	1 (E)	.9 (H)	.7 (M)	.5 (M)
Introduced game fish	.9 (H)	.8 (H)	.6 (M)	.4 (M)
Non-game fish	.7 (M)	.6 (M)	.5 (M)	.3 (L)
No fish	.5 (M)	.3 (L)	.2 (L)	.1 (L)

Comments: Info based on preconstruction EA; the Ashley Creek reach near the WPA supports primarily nongame species. The WPA cells were not designed to support fish

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle NA here and proceed to next function.)

I. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] 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**	1(H)	.9(H)	.6(M)	.8(H)	.7(H)	.5(M)	.4(M)	.3(L)	.2(L)
AA contains **unrestricted outlet**	.9(H)	.8(H)	.5(M)	.7(H)	.6(M)	.4(M)	.3(L)	.2(L)	.1(L)

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

Comments:
Homes located downstream

14F. Short and Long Term Surface Water Storage: (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, circle NA here and proceed with the evaluation.)

I. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

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)	.9(H)	.8(H)	.8(H)	.6(M)	.5(M)	.4(M)	.3(L)	.2(L)
Wetlands in AA flood or pond < **5 out of 10 years**	.9(H)	.8(H)	.7(M)	.7(M)	.5(M)	.4(M)	.3(L)	.2(L)	.1(L)

Comments:
This rating assumes normal precip conditions. The site has received less water than planned.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with the evaluation.)

I. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with 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 with 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)	.8 (H)	.7 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)
AA contains **unrestricted outlet**	.9 (H)	.7 (M)	.6 (M)	.4 (M)	.4 (M)	.3 (L)	.2 (L)	.1 (L)

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

14H Sediment/Shoreline Stabilization: (applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If does not apply, circle NA here and proceed to next function)

I. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses	*Duration of surface water adjacent to rooted vegetation*		
	permanent / perennial	seasonal / intermittent	Temporary / ephemeral
≥ 65%	1 (H)	.9 (H)	.7 (M)
35-64%	.7 (M)	.6 (M)	.5 (M)
< 35%	.3 (L)	.2 (L)	.1 (L)

Comments:

14I. Production Export/Food Chain Support:

I. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P = permanent/perennial; S/I = seasonal/intermittent; T/E /A= temporary/ephemeral or absent [see instructions for further definitions of these terms].)

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	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7M	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

14J. Groundwater Discharge/Recharge: (Check the indicators in i & ii below that apply to the AA)

I. Discharge Indicators

- ___Springs are known or observed
- X Vegetation growing during dormant season/drought
- ___Wetland occurs at the toe of a natural slope
- X 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 present without underlying impeding layer
- X Wetland contains inlet but no outlet
- ___Other

III. **Rating:** Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H = high, L = low] for this function.

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	N/A (Unknown)

Comments: Groundwater recharge occurs in the two cells.

14K. Uniqueness:

I. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] 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 MNHP			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MNHP			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1 (H)	.9 (H)	.8 (H)	.8 (H)	.6 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)
Moderate disturbance at AA (#12i)	.9 (H)	.8 (H)	.7 (M)	.7 (M)	.5 (M)	.4 (M)	.4 (M)	.3 (L)	.2 (L)
High disturbance at AA (#12i)	.8 (H)	.7 (M)	.6 (M)	.6 (M)	.4 (M)	.3 (L)	.3 (L)	.2 (L)	.1 (L)

Comments:

14L. Recreation/Education Potential: I. Is the AA a known rec./ed. site: (circle) Y N (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

II. Check categories that apply to the AA: X Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

III. Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use? Y N

(If yes, go to ii, then proceed to iv, if no, then rate as [circle] Low [0.1])

iv. Rating (use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Ownership	*Disturbance at AA (#12i)*		
	low	moderate	high
public ownership	1 (H)	.5 (M)	.2 (L)
private ownership	.7 (M)	.3 (L)	.1 (L)

Comments: Area is open to public except during breeding season

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	.3	1	
B. MT Natural Heritage Program Species Habitat	H	1	1	
C. General Wildlife Habitat	E	1	1	
D. General Fish/Aquatic Habitat	L	.3	1	
E. Flood Attenuation	M	.6	1	
F. Short and Long Term Surface Water Storage	H	1	1	
G. Sediment/Nutrient/Toxicant Removal	H	1	1	
H. Sediment/Shoreline Stabilization	H	.9	1	
I. Production Export/Food Chain Support	H	.9	1	
J. Groundwater Discharge/Recharge	H	1	1	
K. Uniqueness	M	.6	1	
L. Recreation/Education Potential	H	1	1	
Totals:		9.6	12	80% 9.6x138=1325

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below) I (II) III IV

Category I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, go 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
___ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.

Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)
X Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or
X 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
X Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

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 does not satisfy criteria go to Category III)
___ "Low" rating for Uniqueness; and
___ "Low" rating for Production Export/Food Chain Support; and
___ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

MDT WETLAND MONITORING – VEGETATION TRANSECT

LAND & WATER B-20

Site: Batavia: Cell A Date: 8/11/02 Examiner: J. Asebrook Transect # 1

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

Vegetation type 1:		
Length of transect in this type:	61	feet
Elymus repens	4	
Hordeum jubatum	+	
Distichlis stricta	2	
Achillea millefolium	+	
Puccinellia nuttalliana	+	
Elymus smithii	+	
Melilotus alba	+	
Aster hesperius	+	
Total Vegetative Cover:	65%	

Vegetation type 2:	Hordeum jubatum/Eleocharis palustris		
Length of transect in this type:	190		feet
Hordeum jubatum	5	Spartina gracilis	+
Puccinellia nuttalliana	3	Lactuca serriola	+
Agrostis stolonifera	+	Aster ascendens	+
Phalaris arundinacea	1	Scirpus acutus	+
Distichlis stricta	2	Cirsium arvense	+
Elymus smithii	+		
Eleocharis palustris	3		
Juncus balticus	1		
Ceratophyllum demersum	+		
Deschampsia cespitosa	+		
Triglochin maritime	+		
Elymus repens	+		
Total Vegetative Cover:	60%		

Vegetation type 3:	Eleocharis palustris	
Length of transect in this type:	55	feet
Hordeum jubatum	1	
Eleocharis palustris	5	
Scirpus acutus	+	
Phalaris arundinacea	+	
Triglochin maritime	+	
Polypogon monspeliensis	+	
Agrostis stolonifera	+	
Aster ascendens	+	
Ceratophyllum demersum	5	
Deschampsia cespitosa	+	
Total Vegetative Cover:	98%	

Vegetation type 4:	Ceratophyllum demersum (water)	
Length of transect in this type:	9	feet
Ceratophyllum demersum	5	
Scirpus acutus	1	
Eleocharis palustris	1	
Total Vegetative Cover:	100%	

MDT WETLAND MONITORING – VEGETATION TRANSECT (back of form)

LAND & WATER B-21

Cover Estimate

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

Indicator Class:

+ = Obligate
- = Facultative/Wet
0 = Facultative

Source:

P = Planted
V = Volunteer

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

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:

Appendix C

REPRESENTATIVE PHOTOGRAPHS
2002 AERIAL PHOTOGRAPH

MDT Wetland Mitigation Monitoring
Batavia
Kalispell, Montana

LAND & WATER

Photo Point No. 1: View looking southwest

Photo Point No. 2: View looking southwest

Photo Point No. 3: View looking southwest into Cell A.

Photo Point No. 4: View looking northeast into Cell A. The vegetation transect was conducted in the foreground.

Photo Point No. 5: View looking northeast between Cell A and Cell B.

Photo Point No. 6: View looking northeast into Cell B. This cell was dry in 2001.

Batavia Mitigation Site 2002

Photo Point No. 7: View looking southwest toward a depression present in Cell B.

Photo Point No. 9: View looking east into Cell C.

Photo Point No. 10: View looking west into Cell C.

Vegetation Transect: North (wetland) end looking away from transect

Vegetation Transect: North (wetland) end looking along transect.

Vegetation Transect: South (upland) end looking along transect.

AVIA WETLAND ROLL:000 SCALE:1:6000 FLT:8 07/23/2002 11:50:13
BATAVIA 2002
628-68
/ 340 f/5.6 FF1.0 EC 0 SIN dt746.6 27.1V -56mb ER00 CAM5169

Appendix D

BIRD SURVEY PROTOCOL
GPS PROTOCOL

MDT Wetland Mitigation Monitoring
Batavia
Kalispell, Montana

LAND & WATER

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.

2001 BIRD SURVEY PROTOCOL

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