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

*Hoskins Landing
Dixon, Montana*



Prepared for:

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

Prepared by:

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

December 2006

Project No: B43054.00 - 0110



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1.0 INTRODUCTION

The Hoskins Landing Wetland Mitigation Site was developed to mitigate wetland impacts associated with Montana Department of Transportation (MDT) proposed Dixon-West and Paradise-East highway reconstruction projects along Montana Highway 200. This report documents the fourth year of monitoring at the site. Hoskins Landing is located in Sanders County in Watershed # 3 (Lower Clark Fork). The mitigation site is located approximately one-quarter mile north of Dixon, adjacent to the Flathead River (**Figure 1**). Elevation is approximately 2,500 feet with slight topographic variation throughout the project site.

The approximate site boundary is illustrated on **Figure 2** in **Appendix A**, and the original site plans are included in **Appendix D**. The project is located adjacent to the Flathead River in an area of historic floodplain, heavily impacted from past agricultural activities. Seasonal flooding provides the primary wetland hydrology through inundation of backwater channels. Local groundwater systems moving through alluvium provide a secondary source of hydrology for this site. The site is located on the Flathead Indian Reservation and is managed by the Confederated Salish & Kootenai Tribes. The wetland easement area is mostly fenced with several exclusions on the east and west ends near the river banks. Livestock grazing has mostly been removed from the site with the establishment of electric fences, although a small corridor adjacent to the Flathead River is still accessible to livestock.

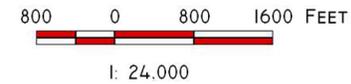
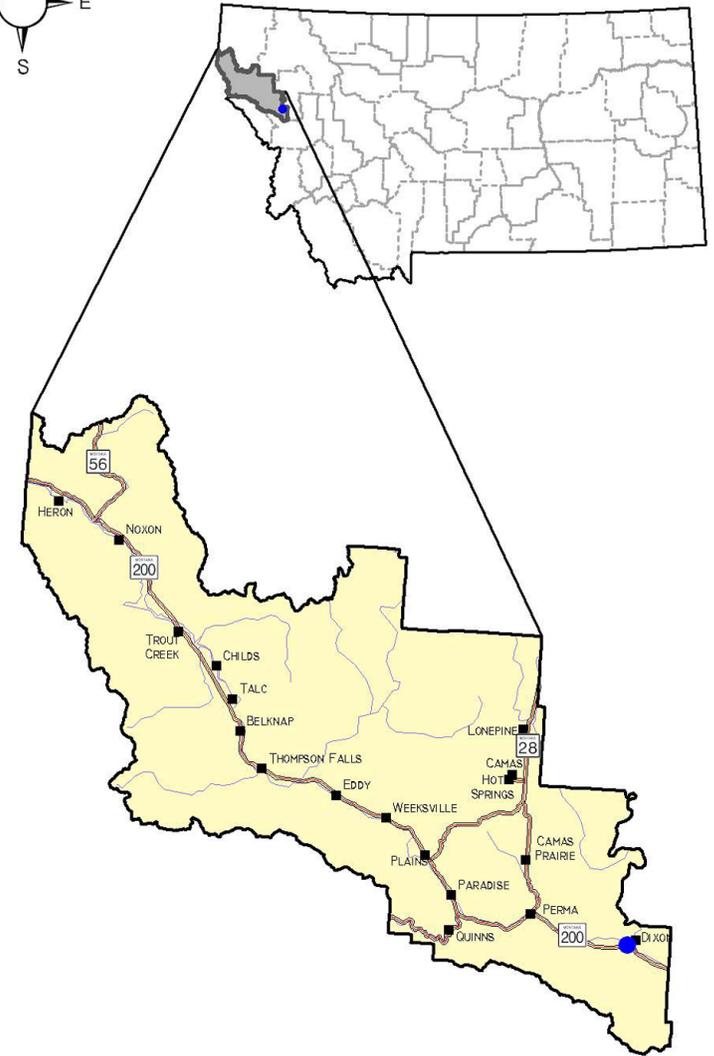
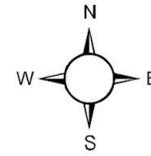
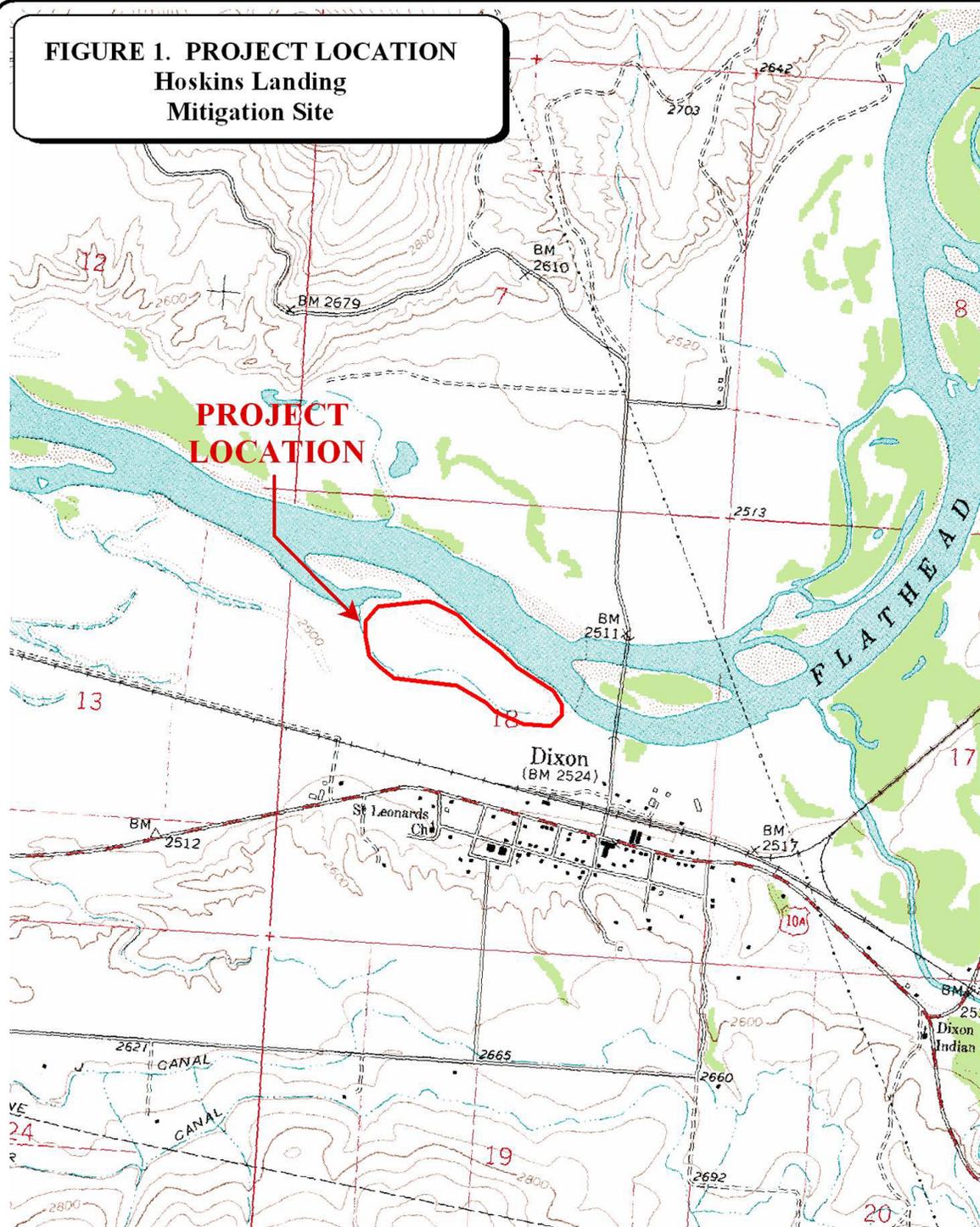
Initial construction was completed in fall 2002 with the goal of restoring/creating 8.1 acres of wetlands and enhancing vegetation on 5.2 acres of heavily grazed and cleared lands. Construction diagrams are presented in **Appendix D**. Revegetation work was conducted during the spring and fall of 2003, 2004 and 2005, and a berm / road crossing of the backwater channel was removed during spring 2005 to reconnect historical flow patterns. The primary components of construction include:

- Excavation and grading of 8.1 acres to facilitate wetland development.
- Enhancement of 5.2 acres of native vegetation characteristics in the lower Flathead River riparian corridor.
- Filling of inlet channel and removal of headgate in the northeast corner of the site.
- Removal of outlet dam along the remnant channel bordering the south portion of the site.
- Removal of man-made flood control berm along the Flathead River and grading of excavated ground to 10:1 slopes.
- Removal of a man-made berm along the remnant backwater channel.

The site was designed to mitigate for specific wetland functions impacted by MDT roadway projects, including: storm water retention, roadway runoff filtration, sediment and nutrient retention, water quality, groundwater recharge, wildlife habitat and riparian vegetation.

Pre-construction wetland delineation documented 6.67 acres of wetlands at the site (Western EcoTech 1999). The monitoring area is illustrated on **Figure 2** in **Appendix A**.

FIGURE 1. PROJECT LOCATION
Hoskins Landing
Mitigation Site



PROJECT #: 130091.039
 DATE: Nov 2002
 LOCATION: DIXON
 PROJECT MANAGER: J. BERGLUND
 DRAWN BY: B. STEINEBACH



1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

2.0 METHODS

2.1 Monitoring Dates and Activities

Monitoring activities were conducted on May 2nd (spring) and August 2nd (mid-season) of 2006. The spring visit was conducted to observe bird and other wildlife use. The mid-season visit was conducted to document vegetation, soil, and hydrologic conditions used to map jurisdictional wetlands. All information contained on the Wetland Mitigation Site Monitoring Form (**Appendix B**) was collected at this time. Activities and information conducted/collected included: wetland delineation; wetland/open water aquatic habitat boundary mapping; vegetation community mapping; vegetation transect; soils data; hydrology data; bird and general wildlife use; photograph points; macroinvertebrate sampling; GPS data points; functional assessment; and (non-engineering) examination of topographic features.

2.2 Hydrology

Wetland hydrology indicators were recorded during the mid-season visit 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**). Additional hydrologic data were recorded on the Wetland Mitigation Site Monitoring Form (**Appendix B**). No groundwater monitoring wells were installed at the site.

2.3 Vegetation

General dominant species-based vegetation community types 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 do 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**).

A 10-foot wide belt transect was established during the mid-season monitoring event to represent the range of current vegetation conditions. Percent cover was estimated for each vegetative species within each successive vegetative community encountered within the “belt” using the following values: T (few plants); P (1-5%), 1 (5-15%); 2 (15-25%); 3 (25-35%); 4 (35-45%); 5 (45-55%) and so on to 9 (85-95%). Wetland indicator status was recorded for each species. The transect location is illustrated on **Figure 2** in **Appendix A**. The transect is used to evaluate changes over time, especially the establishment and increase of hydrophytic vegetation. The transect location was marked on the aerial photo and all data were recorded on the mitigation site monitoring form. Transect endpoint locations were recorded with the GPS unit in 2002. A photo was taken from both ends of the transect along the transect path.

A comprehensive plant species list for the site was compiled and is updated as new species are encountered.

2.4 Soils

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

2.5 Wetland Delineation

Wetland delineation was conducted during the mid-season visit according to the 1987 COE Wetland Delineation Manual (Environmental Laboratory 1987). Wetland and upland areas within the monitoring area were investigated for the presence of wetland hydrology, hydrophytic vegetation and hydric soils. The information was recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**). The wetland/upland boundary was originally delineated on the aerial photo and then recorded with a resource grade GPS unit using the procedures outlined in **Appendix E**. Modifications to these boundaries in 2006 were accomplished by hand mapping onto the 2005 aerial photograph. The wetland/upland boundary in combination with the wetland/open water boundary was used to calculate the final wetland acreage. Pre-construction wetland delineation documented 6.7 acres of wetlands at the site (Western EcoTech 1999).

2.6 Mammals, Reptiles, and Amphibians

Mammal and herptile 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 used.

2.7 Birds

Bird observations were recorded during the spring and mid-season visits. No formal census plots, spot mapping, point counts, or strip transects were conducted. The spring birding visit was conducted in accordance with the Bird Survey Protocols (**Appendix E**). During the mid-season visit, bird observations were recorded incidental to other monitoring activities. Bird species observations were categorized by species, activity code, and general habitat association on the Bird Survey Field Data Sheet (**Appendix B**).

2.8 Macroinvertebrates

Macroinvertebrate samples were collected during the mid-season site visit at two separate locations (**Figure 2** in **Appendix A**). Collection occurred using the Macroinvertebrate Sampling Protocol (**Appendix F**). Samples were preserved as outlined in the sampling

procedure and sent to Rhithron Associates, Inc. in Missoula, Montana for analysis (**Appendix F**).

2.9 Functional Assessment

A functional assessment form was completed in 2006 using the 1999 MDT Montana Wetland Assessment Method (Berglund 1999) (**Appendix B**). Field data necessary for this assessment were collected during the mid-season visit. Western Eco Tech completed baseline functional assessment during the initial wetland delineation using the 1996 MDT Montana Wetland Field Evaluation Form.

2.10 Photographs

The July 7, 2006 aerial photograph was used for **Figures 2 and 3** in **Appendix A**. Photographs were taken illustrating current land uses surrounding the site, the upland buffer, the monitored area, and the vegetation transect (**Appendix C**). Each photograph point location was recorded with a resource grade GPS in 2002 and mapped (**Figure 2** in **Appendix A**). All photographs were taken using a digital camera.

2.11 GPS Data

During the 2002 monitoring season, point data 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 recorded with a resource grade GPS unit in 2002, but were modified via hand mapping onto aerial photographs in 2006. Procedures used for GPS mapping and aerial photograph referencing are included in **Appendix E**.

2.12 Maintenance Needs

Observations were made of existing structures and of erosion/sediment problems to identify maintenance needs. This did not constitute an engineering-level structural inspection, but rather a cursory examination. Current or future potential problems were documented on the monitoring form.

3.0 RESULTS

3.1 Hydrology

The main source of hydrology is seasonal flooding by the Flathead River. This mitigation site occurs in Flathead River floodplain consisting of back channels and shallow open water areas. The eastern end of the site once contained a headgate that controlled the flow of water into the remnant channel running along the southern boundary. This has been removed, allowing water to flow through channel during seasonally high flows. A secondary source of hydrology is the persistent upwelling and lateral movement of groundwater through the alluvial materials. The

water regime at Hoskins Landing is ultimately controlled by water release from Kerr Dam over 42 miles upriver.

Open water areas first decreased during 2005 due an increase in aquatic vegetation. The same trend was observed during the 2006 monitoring. Some former open water areas were mapped as Type 3 vegetation consisting of emergent wetland and aquatic bed types in shallow waters. These shallow waters occurred across approximately 3.87 acres or 30% of the wetland area (**Figure 3** in **Appendix A**) during the mid-season visit. Water depth at the open water/rooted vegetation boundary was approximately 1.0 feet. Inundation was observed at this time across another 60% of the wetland area. Inundation was present throughout all of Community Types 2, 3, 11, and 12 (**Figure 3**).

3.2 Vegetation

Eighty-six plant species were identified at the site and are listed in **Table 1**. The majority of these species are herbaceous. A few small remnant shrub patches exist, found mostly along the active backwater channel. Several small stands of black cottonwood (*Populus trichocarpa*) and box elder (*Acer negundo*) occur on higher terraces located along the river and backwater channels. Eight wetlands types and six upland community types were identified and mapped at the mitigation site (**Figure 3** in **Appendix A**). The seven wetland community types include Type 2: *Eleocharis/Phalaris*, Type 3: *Potamogeton/Elodea*, Type 5: *Phalaris/Salix*, Type 7: *Phalaris*, Type 11: *Ceratophyllum*, Type 12: *Juncus/Eleocharis*, Type 13: *Phalaris/Agrostis*, and Type 14: *Populus / Salix*. Plant species observed within each of these communities are listed on the attached data form (**Appendix B**). The six upland community types include Type 4: *Agropyron/Melilotus*, Type 6: *Festuca/Phleum*, Type 8: *Agropyron/Plantago*, Type 9: *Bromus*, Type 10: *Populus/Crataegus*, and Type 14: *Agrostis/Poa*. Plant species observed within each of these communities are also listed on the attached data form (**Appendix B**).

Types 3 and 11 are the wettest community types and occurred as aquatic bed/emergent wetland communities in the shallow waters of the excavated wetlands and remnant backwater channel (**Figure 3** in **Appendix A**). Type 3 is dominated by large leaf pondweed (*Potamogeton amplifolius*), curly pondweed (*Potamogeton crispus*), broad water-weed (*Elodea canadensis*) and least spike-rush (*Eleocharis acicularis*). Type 11 is mostly dominated by common hornwort (*Ceratophyllum demersum*). Types 2 and 12 are the next wettest areas, consisting of emergent vegetation types occurring in an undisturbed wetland and the fringes of excavated wetland.

Type 2 is located on the west side, surrounded by the newly constructed wetlands, dominated by least spike rush, reed canarygrass (*Phalaris arundinacea*) and bulrush (*Scirpus acutus*). Type 12 occurs along the fringes of excavated wetland in areas that receive annual inundation; vegetation is dominated by three-stamen rush (*Juncus ensifolius*), creeping spike rush (*Eleocharis palustris*) and redtop (*Agrostis alba*). Type 5 occurs throughout the backwater channel located on the south side of the project border. Type 7, 13 and 14 are the least wet, dominated by reed canarygrass, and are located within the seasonally flooded areas adjacent to river. A few mature cottonwoods growing on the along the river terrace are also mapped as part of the Type 7 community. Type 14, previously mapped as Type 7, is dominated by black cottonwood and

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sandbar willow saplings that started as volunteers in 2004. The increase in vegetation cover and overall development of woody species within this area warranted an additional community type.

Adjacent upland vegetation communities are mainly dominated by rangeland and/or aggressive invasive species. Type 6 upland areas are currently dominated with pasture grasses such as *Festuca/Phleum*. Type 4 upland areas increased in vegetation cover, now mostly dominated by upland grass species including quackgrass (*Agropyron repens*) and slender wheatgrass (*Elymus trachycaulus*). Native shrubs were planted during the spring of 2003 and 2004, as part of the riparian enhancement efforts. The cover value of the plantings has increased since the previous monitoring, but currently is not considered dominant for this community type.

Type 10 is located along the higher terraces of the river and backwater channel, consisting of mature cottonwoods and box elder. A minor shrub layer is present, consisting of hawthorn (*Crataegus douglasii*) and American plum (*Prunus americana*). Type 8 is located adjacent to the Flathead River and along the backwater channels. Type 8 is dominated by quackgrass, redtop and English plantain (*Plantago lanceolata*). Type 14 is located near the back water channel along the southern boundary of the mitigation site and is a new vegetation community. Type 14 is dominated by redtop and Kentucky bluegrass (*Poa pratensis*). This area was considered within the Type 6 community during previous monitoring. The removal of livestock from this area has allowed the dominant species to flourish.

Several noxious weeds were observed throughout the Hoskins Landing site. Type 4 and 6 had small amounts of invasive species. During the 2003 mapping Type 9 was dominated by mostly invasive species. Evidence of weed control measures were observed during the 2006 monitoring. These control measures have reduced the cover of invasive species and increased the cover value of grasses within Type 9. Type 9 is currently dominated by non-native grass species that usually follow a disturbance such as herbicide application.

Category 1 noxious weeds found at this mitigation site included: spotted knapweed (*Centaurea maculosa*), Canada thistle, hounds tongue (*Cynoglossum officinale*), oxeye daisy (*Chrysanthemum leucanthemum*), St. John's wort (*Hypericum perforatum*) and Dalmatian toadflax (*Linaria dalmatica*). Two Category 3 noxious weeds were also found: yellowflag iris (*Iris pseudacorus*) and Eurasian water milfoil (*Myriophyllum spicatum*). Other exotic weedy species included common dandelion (*Taraxicum officinalis*), white goosefoot, pepper-grass (*Lepidium perfoliatum*), tumbleweed (*Sisymbrium altissimum*), and quackgrass.

Vegetation transect results are detailed in the **Monitoring Form (Appendix B)** and are summarized in **Table 2** and **Charts 1** and **2**.

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Table 1: 2002 to 2006 vegetation species list for the Hoskins Landing Wetland Mitigation Site.

Scientific Name ¹	Common Name	Region 9 (Northwest) Wetland Indicator
<i>Acer negundo</i>	box elder	FAC+
<i>Agropyron repens</i>	quackgrass	FACU
<i>Agrostis alba</i>	redtop	FAC+
<i>Achillea millefolium</i>	common yarrow	FACU
<i>Alnus incana</i>	alder	FACW
<i>Alopecurus pratensis</i>	meadow foxtail	FACW
<i>Amaranthus retroflexus</i>	red-root pigweed	FACU+
<i>Amelanchier alnifolia</i>	serviceberry	FACU
<i>Artemisia ludoviciana</i>	white sagebrush	FACU-
<i>Bromus japonicus</i>	Japanese brome	UPL
<i>Bromus tectorum</i>	cheatgrass	--
<i>Carex bebbiana</i>	Bebbs sedge	OBL
<i>Carex lanuginosa</i>	wooly sedge	OBL
<i>Carex nebrascensis</i>	Nebraska sedge	OBL
<i>Carex retrorsa</i>	retorse sedge	FAC
<i>Carex utriculata</i>	beaked sedge	OBL
<i>Centaurea maculosa</i>	spotted knapweed	--
<i>Ceratophyllum demersum</i>	common hornwort	OBL
<i>Chenopodium album</i>	white goosefoot	FAC
<i>Chrysanthemum leucanthemum</i>	oxeye daisy	--
<i>Cirsium arvense</i>	Canada thistle	FACU+
<i>Cirsium vulgare</i>	bull thistle	FACU
<i>Coreopsis atkinsoniana</i>	tickseed	FACU
<i>Cornus stolonifera</i>	red-osier dogwood	FACW
<i>Crataegus douglasii</i>	Douglas hawthorn	FAC
<i>Cynoglossum officinale</i>	hound's tongue	FACU
<i>Dactylis glomerata</i>	orchard grass	--
<i>Dipsacus fullonum</i>	Fullers teasel	FAC
<i>Eleocharis acicularis</i>	least spike rush	OBL
<i>Eleocharis palustris</i>	creeping spike rush	OBL
<i>Elodea canadensis</i>	broad water-weed	OBL
<i>Elymus trachycaulus</i>	slender wheatgrass	FAC
<i>Equisetum arvense</i>	field horsetail	FAC
<i>Equisetum hyemale</i>	scouring rush	FACW
<i>Festuca pratensis</i>	meadow fescue	FACU+
<i>Erodium cicutarium</i>	red-stem filaree	NI
<i>Gnaphalium palustre</i>	cudweed	FAC+
<i>Helianthus annuus</i>	common sunflower	FACU+
<i>Helenium autumnale</i>	common sneezeweed	FACW
<i>Hippuris vulgaris</i>	common mare's-tail	OBL
<i>Hypericum perforatum</i>	St. John's wort	--
<i>Iris pseudoacorus</i>	yellow iris	OBL
<i>Juncus balticus</i>	Baltic rush	FACW
<i>Juncus ensifolius</i>	three-stamen rush	FACW
<i>Juniperus scopulorum</i>	Rocky Mountain juniper	--
<i>Lepidium perfoliatum</i>	clasping pepper-grass	FACU+
<i>Linaria dalmatica</i>	dalmatian toadflax	--
<i>Malva neglecta</i>	mallow	--
<i>Melilotus alba</i>	white sweetclover	FACU
<i>Melilotus officinalis</i>	yellow sweetclover	FACU
<i>Mentha arvensis</i>	field mint	FAC
<i>Myosotis scorpioides</i>	true forget me not	FACW
<i>Myriophyllum spicatum</i>	Eurasian water-milfoil	OBL
<i>Oenothera villosa</i>	hairy evening-primrose	FAC+

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Table 1 (continued): 2002 to 2006 vegetation species list for the Hoskins Landing Wetland Mitigation Site.

Scientific Name ¹	Common Name	Region 9 (Northwest) Wetland Indicator
<i>Panicum capillare</i>	old witchgrass	FACU+
<i>Phalaris arundinacea</i>	reed canarygrass	FACW
<i>Phleum pratense</i>	timothy	FACU
<i>Pinus ponderosa</i>	ponderosa pine	FACU-
<i>Plantago lanceolata</i>	English plantain	FAC
<i>Plantago major</i>	plantain	FACU+
<i>Poa pratensis</i>	Kentucky bluegrass	FACU+
<i>Polygonum amphibium</i>	water smartweed	OBL
<i>Polygonum aviculare</i>	prostrate knotweed	FACW+
<i>Populus tremuloides</i>	quaking aspen	FAC+
<i>Populus trichocarpa</i>	cottonwood	FAC
<i>Potamogeton amplifolius</i>	large-leaf pondweed	OBL
<i>Potamogeton crispus</i>	curly pondweed	OBL
<i>Potamogeton natans</i>	floating-leaf pondweed	OBL
<i>Prunella vulgaris</i>	heal-all	FACU+
<i>Prunus americana</i>	American plum	FACU
<i>Rosa woodsii</i>	woods rose	FACU
<i>Rumex crispus</i>	curly dock	FACW
<i>Sagittaria latifolia</i>	arrow-head	OBL
<i>Salix bebbiana</i>	Bebb willow	FACW
<i>Salix exigua</i>	sandbar willow	OBL
<i>Scirpus acutus</i>	hard stem bulrush	OBL
<i>Scirpus microcarpus</i>	small-fruit bulrush	OBL
<i>Scirpus validus</i>	soft-stem bulrush	OBL
<i>Sisymbrium altissimum</i>	tall tumble mustard	FACU-
<i>Solanum dulcamara</i>	climbing nightshade	FAC+
<i>Solidago missouriensis</i>	Missouri goldenrod	--
<i>Symphoricarpos albus</i>	snowberry	FACU
<i>Taraxicum officinalis</i>	common dandelion	FACU
<i>Trifolium pratense</i>	red clover	FACU
<i>Verbascum thapsus</i>	common mullien	--
<i>Veronica Americana</i>	American speedwell	OBL

¹ **Bolded** species indicate those documented in the analysis area for the first time in 2006.

Table 2: Transect 1 data summary.

Monitoring Year	2002	2003	2004	2005	2006
Transect Length (feet)	390	390	390	390	390
# Vegetation Community Transitions along Transect	6	11	10	10	10
# Vegetation Communities along Transect	4	5	5	5	5
# Hydrophytic Vegetation Communities along Transect	2	3	3	3	3
Total Vegetative Species	31	31	30	30	30
Total Hydrophytic Species	22	23	22	23	23
Total Upland Species	9	8	8	7	7
Estimated % Total Vegetative Cover	65	70	71	74	75
% Transect Length Comprised of Hydrophytic Vegetation Communities	72	70	68	68	68
% Transect Length Comprised of Upland Vegetation Communities	28	30	32	32	32
% Transect Length Comprised of Unvegetated Open Water	0	0	0	0	0
% Transect Length Comprised of Bare Substrate	0	0	0	0	0

Chart 1: Transect maps showing vegetation types from the start of transect (0 feet) to the end of transect (390 feet for each year monitored).

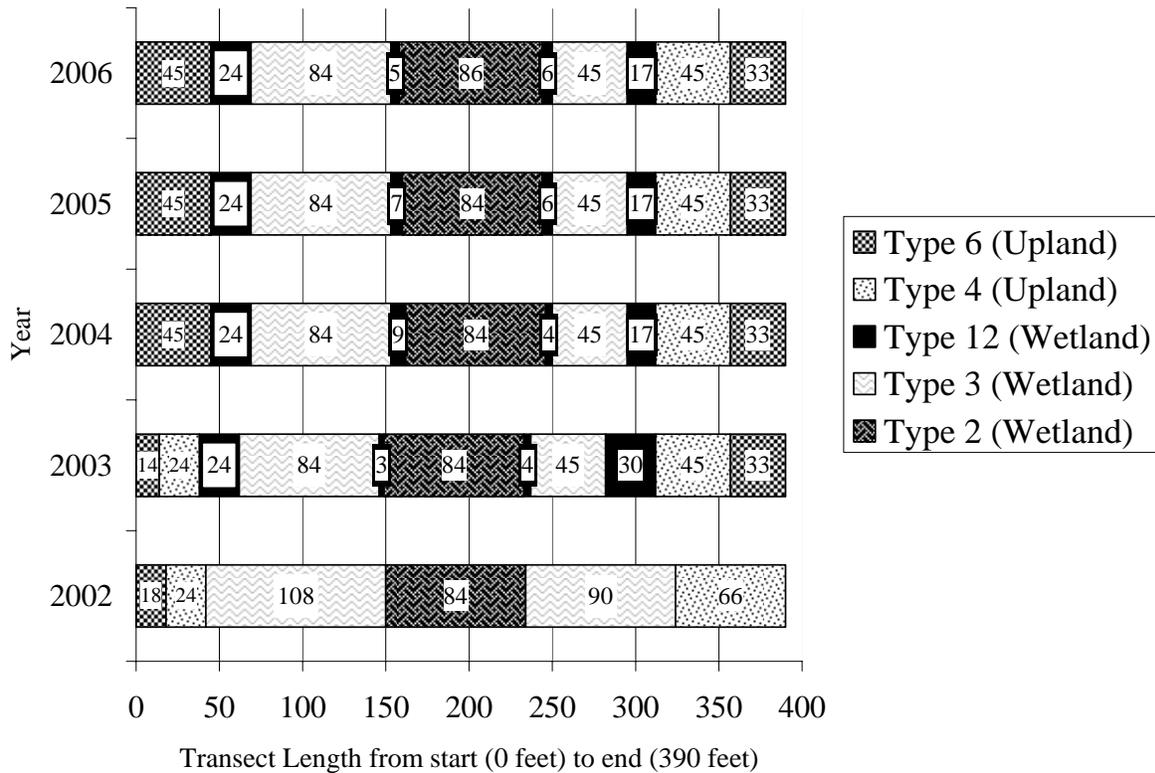
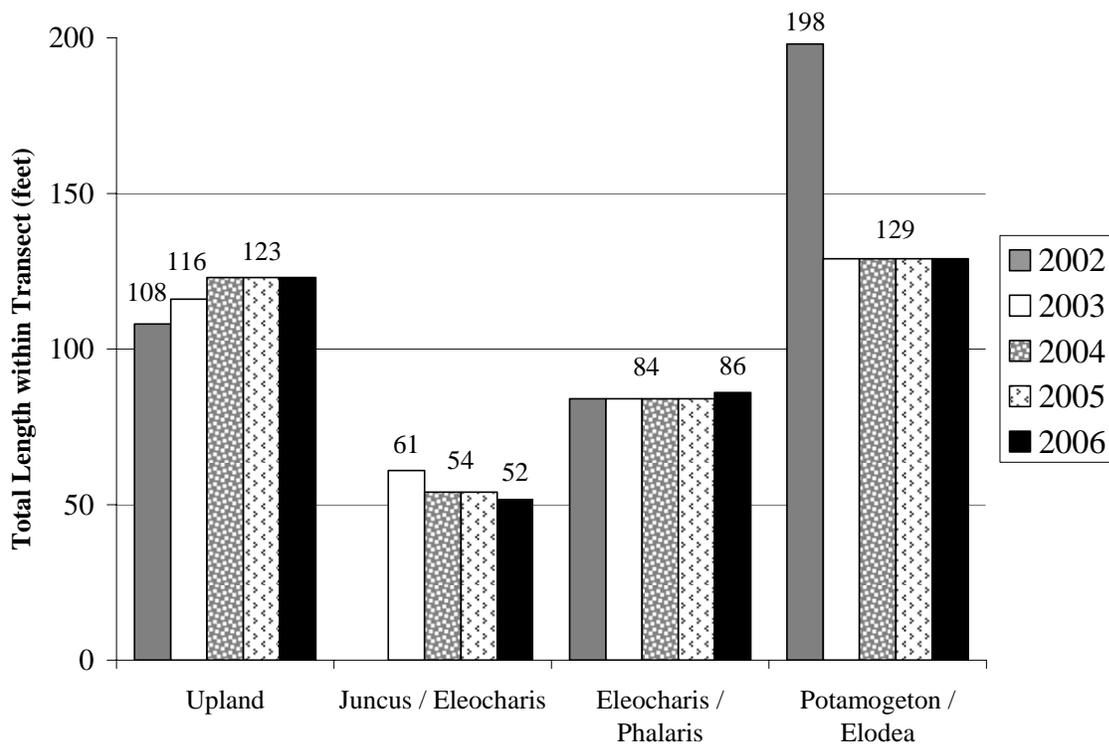


Chart 2: Length of vegetation communities within Transect 1 for each year monitored.



3.3 Soils

Soils at the site are mapped in the Sanders County Soil Survey as Horseplains-riverwash and Revais silt loam. Horseplains-riverwash is described as a fine sandy loam, 60 inches deep with a lighter surface layer, and slopes of 0-2%. Revais silt loam has a depth of 60 inches with lighter colored surface and slopes of 0-2% (NRCS 2002). Horseplains and Revais soils are not listed on the Montana NRCS Hydric Soil list. Soil characteristics at each wetland determination point were compared with those of the Horseplains and Revais soil. The soils observed across most of the site did not generally match the Horseplains and Revais soil descriptions, as textures were slightly different.

Wetland soils observed during monitoring and documented on the Routine Wetland Determination form were mostly loams, silt loams or clays with very low chromas (1 or 2) within 2 inches of the surface. Mottles (redoximorphic features) were present in three profiles, both having surface inundation. The two remaining soil profiles described on the Routine Wetland Determination forms were mapped as upland sampling points, having no soil moisture or distinct hydric characteristics within 18 inches of the surface.

3.4 Wetland Delineation

Delineated wetland boundaries are illustrated on **Figure 3** in **Appendix A**. Completed **COE Forms** are included in **Appendix B**. Soils, vegetation, and hydrology are discussed in preceding sections. Wetland conditions were identified during the 2006 monitoring (**Table 3**).

Table 3: Wetland conditions identified during monitoring from 2002 to 2006.

Condition	2006	2005	2004	2003	2002
Wetland Area	13.01	13.01	11.88	11.35	10.99
Open Water Area	0.00	0.00	1.14	1.14	1.14
Total Aquatic Habitat Area	13.01	13.01	13.02	12.49	12.13

Approximately 13.01 wetland acres are currently within the monitoring area (**Table 3; Figure 3** in **Appendix A**). The open water areas (1.14 ac.) mapped during the previous monitoring years were considered shallow water with aquatic vegetation during 2005 and 2006. The pre-construction wetland delineation reported 6.67 wetland and no open water acres. The net increase in aquatic habitat acres is $13.01 - 6.67 = 6.34$ acres. Additional area may form with time and more normal precipitation around the low gradient portions of the current wetland area.

Wetland areas remained similar in size between the 2005 and 2006 monitoring season. An increase of 1.13 wetland acres was observed between 2004 and 2005 monitoring. The increase in wetland acres was recorded within the type 3 area. Areas considered as open water in the past have been mapped as shallow water with emergent wetland types dominated by aquatic vegetation. Community types along the shoreline of the excavated wetland exhibited similar conditions as those observed in 2005. Community Type 12 is mapped as developing emergent vegetation in areas inundated by seasonal flooding. Community Type 13 is a wetland area located adjacent to the shoreline of the excavated wetlands, further up the bank in less saturated conditions.

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During the 2003 to 2006 delineations, the sparsely vegetated wheatgrass / plantain –dominated flood channel area along the north property border was mapped as “waters of the U.S.” due to the hydrologic connection to the Flathead River (but was not mapped as “open water” due to its temporarily-flooded nature). Some of these areas are also mapped as wetlands, but most of this area is not considered wetland due to the lack of qualifying vegetation and soil characteristics. The majority of these areas remain in a similar condition to that observed during 2005 monitoring.

The only decrease in wetland area was observed within Community Type 7 located along the Flathead River. This area was delineated as a larger unit during 2004 monitoring. Located at a slightly higher elevation along the upper banks of the river, this area was observed to have a portion dominated by mostly upland species associated with Community Type 6 and was classified as upland.

3.5 Wildlife

Wildlife species, or evidence of wildlife, observed on the site during 2002, 2003, 2004, 2005, and 2006 monitoring efforts are listed in **Table 4**. Specific evidence observed, as well as activity codes pertaining to birds, is provided on the Monitoring Form in **Appendix B**.

This site provides habitat for a variety of wildlife species. One mammal, one reptile, three fish, and 21 bird species were noted at the mitigation site during the 2006 site visits. Many other wildlife species presumably use the site but were not observed during the monitoring visits.

Table 4: Fish and wildlife species observed at the Hoskins Landing Wetland Mitigation Site from 2002 to 2006.

FISH	
Black Bullhead (<i>Ictalurus melas</i>)¹ Northern Pike fingerling (<i>Esox lucius</i>) Pumpkinseed (<i>Lepomis gibbosus</i>) ¹	
AMPHIBIANS	
None	
REPTILES	
Painted Turtle (<i>Chrysemys picta</i>)	
BIRDS	
American Coot (<i>Fulica americana</i>) American Crow (<i>Corvus brachyrhynchos</i>) American Robin (<i>Turdus migratorius</i>) American Wigeon (<i>Anas americana</i>) American White Pelican (<i>Pelecanus erythrorhynchos</i>) Bald Eagle (<i>Haliaeetus leucocephalus</i>) Barn Swallow (<i>Hirundo rustica</i>) Black-Billed Magpie (<i>Pica hudsonia</i>) Black & White Warbler (<i>Mniotilta varia</i>) Blue-Winged Teal (<i>Anas discors</i>) Brown-Headed cowbird (<i>Molothrus ater</i>) Canada Goose (<i>Branta canadensis</i>) Cinnamon Teal (<i>Anas cyanoptera</i>) Cliff Swallow (<i>Petrochelidon pyrrhonota</i>) Common Raven (<i>Corvus corax</i>) Doubled Crested Cormorant (<i>Phalacrocorax auritus</i>) Eurasian Wigeon (<i>Anas Penelope</i>) European Starling (<i>Sturnus vulgaris</i>) Field Sparrow (<i>Spizella pusilla</i>) Great Blue Heron (<i>Ardea herodias</i>)	Killdeer (<i>Charadrius vociferous</i>) Lesser Yellowlegs (<i>Tringa flavipes</i>) Mallard (<i>Anas platyrhynchos</i>) Northern Flicker (<i>Colaptes auratus</i>) Northern Harrier (<i>Circus cyaneus</i>) Northern Shoveler (<i>Anas clypeata</i>) Osprey (<i>Pandoin haliaetus</i>) Red-Tailed Hawk (<i>Buteo jamaicensis</i>) Red-Winged blackbird (<i>Agelaius phoeniceus</i>) Ring -Billed Gull (<i>Larus delawarensis</i>) Ring-necked Pheasant (<i>Phasianus colchicus</i>) Song Sparrow (<i>Melospiza melodia</i>) Spotted Sandpiper (<i>Actitis macularia</i>) Tree Swallow (<i>Tachycineta bicolor</i>) Violet-Green Swallow (<i>Tachycineta thalassina</i>) Western Kingbird (<i>Tyrannus verticalis</i>) Western Meadowlark (<i>Sturnella neglecta</i>) Wood Duck (<i>Aix sponsa</i>) Yellow-Headed Blackbird (<i>Xanthocephalus xanthocephalus</i>)
MAMMALS	
Coyote (<i>Canis latrans</i>) Deer (<i>Odocoileus spp.</i>) Mouse [young] (<i>Peromyscus spp.</i>)	Muskrat (<i>Ondatra zibethicus</i>) Red Fox (<i>Vulpes vulpes</i>)

Bolded species were observed during 2006 monitoring. All other species were observed during one or more of the previous monitoring years, but not during 2006.

¹ Observed by MDT staff

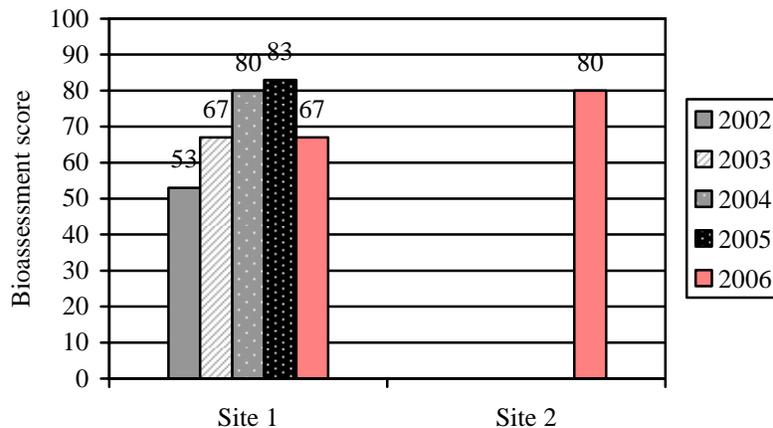
3.6 Macroinvertebrates

Sampling points for Hoskins Landing were located along the western side of the excavated wetland (**Figure 2** in **Appendix A**). Macroinvertebrate data is included in **Appendix F** and is summarized below, in italics, by Rhithron Associates, Inc. (Bollman 2006). Bioassessment scores have been graphed from 2002 to 2006 (Bollman 2006) (**Chart 3**).

Site 1: *Biotic conditions apparently remained quite good at Site 1 at Hoskins Landing; although the site rating dropped from optimal to sub-optimal, taxa richness remained high, and assemblage sensitivity did not suffer degradation. Naidid worms (Nais sp.) dominated the fauna, suggesting that macrophyte surfaces were important habitats, and that bacteria was an important energy source. Sandy, hypoxic substrates are suggested by the midge fauna. Water quality indicators imply good water quality and an expected thermal regime; the biotic index value was well below the median value for all sites in this study, and both expected mayfly taxa (Caenis sp. and Callibaetis sp.) were collected. The functional composition of the sampled assemblage was diverse, and contained all expected feeding groups.*

Site 2: *This site was apparently sampled for the first time in 2006. Optimal biotic conditions appear to have characterized the site; high taxa richness, a diverse non-insect fauna, and relatively high midge diversity resulted in high bioassessment scores. Crayfish (Orconectes sp.) were collected, implying complex food webs. Naidid worms (Nais sp.) dominated the assemblage; bacteria was likely an important energy component. A diverse functional mix was represented.*

Chart 3: Bioassessment scores for Hoskins Landing Wetland Mitigation Site.



3.7 Functional Assessment

Completed 2006 functional assessment forms are included in **Appendix B**. The Hoskins Landing site was separated into two assessment areas (AAs) for the purpose of functional assessments. The two assessment areas on the Hoskins Landing mitigation site are currently rated as a Category III (AA 1) and IV (AA 2)(moderate value). They received moderate ratings for threatened and endangered (T&E) species habitat, general wildlife habitat, flood attenuation, and sediment / shoreline stabilization variables. Other factors contributing to their scores were a high rating for fish / aquatic habitat, surface water storage, production export / food chain support, and groundwater discharge / recharge. Additional factors contributing to their scores

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were a low rating for Montana Natural Heritage Program (MTNHP) species habitat, sediment / nutrient removal, and recreation / education ratings.

The main body of the site received a high rating for fish / aquatic habitat due to increased coverage of floating leaved vegetation and surface water storage due to the acre-feet of water contained in these wetlands. The variable for production export/food chain support rated high due to the overall vegetated acres, high structural diversity, and perennial water regime. The variable for groundwater discharge / recharge rated high due to permeable substrate consisting of alluvial material underlying the site allowing for groundwater recharge from the Flathead River.

The site received a moderate rating for T&E habitat due to observation of a bald eagle (*Haliaeetus leucocephalus*) at the site. The site received a slight increase in the rating for MTHNP species and accounted for the changes in functional points due to the observation of an American white pelican (*Pelecanus erythrorhynchos*). The site received a moderate flood attenuation rating due to the presence of an inflow channel into the wetland and unrestricted nature of the outlet. This category rated slightly lower during the 2005 and 2006 monitoring seasons due to the removal of an outlet along the backwater channel that constricted flow. A road crossing into the site near the west end of the backwater channel was removed during 2005, allowing for unimpeded flow of floodwaters through the entire channel.

The site received a moderate rating for sediment / shoreline stability due to increased cover in plants with deep binding roots including willows and grass-like species (sedges & rushes). Recent revegetation efforts along the fringe of excavated wetland have contributed to the increase in the sediment/shoreline stability rating. In addition, the site received a moderate rating for sediment / nutrient toxicant removal. The site received a low recreation/education rating since it has moderate disturbance level and is in private (Tribal) ownership.

Based on functional assessment results (**Table 5**), approximately 96.67 functional units occur at the Hoskins Landing mitigation site. Baseline functional assessment results are also provided in **Table 5** for general comparative purposes. However, it should be noted that direct comparison between the baseline and 2006 functional assessments are not possible as they were completed using different versions of the MDT functional assessment method. The baseline assessment was completed using the 1996 version, while the 2002 to 2006 assessments were conducted using the most current (1999) version.

Table 5: Summary of baseline and 2002 to 2006 wetland function/value ratings and functional points at the Hoskins Landing Wetland Mitigation Project.

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	WETLANDS ASSESSED WITH 1996 METHOD ¹						WETLANDS ASSESSED WITH 1999 METHOD ¹									
	Baseline 1A	Baseline 1B	Baseline 3	Baseline 8	Baseline 2, 9A, 9B, 10, 11, 12, 13	Baseline 5, 6, 7, 14A, 14B	2002 Site 5	2002 Remainder of Wetlands	2003 Site 5	2003 Remainder of Wetlands	2004 Site 5	2004 Remainder of Wetlands	2005 Site 5 ²	2005 Remainder of Wetlands ²	2006 Site 5 ²	2006 Remainder of Wetlands ²
Listed/Proposed T&E Species Habitat	Low (0.3)	Mod (0.7)	None (0.0)	Mod (0.7)	None (0.0)	None (0.0)	Low (0.0)	Mod (0.7)	Low (0.0)	Mod (0.7)	Low (0.0)	Mod (0.7)	Low (0.0)	Mod (0.8)	Low (0.0)	Mod (0.8)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	Low (0.1)	Mod (0.7)	None (0.0)	None (0.0)	Low (0.0)	Low (0.1)	Low (0.0)	Low (0.1)	Low (0.0)	Low (0.1)	Low (0.0)	Low (0.1)	Low (0.0)	Low (0.2)
General Wildlife Habitat	High (0.9)	Mod (0.5)	Mod (0.5)	High (0.9)	Low (0.1)	Low (0.1)	Low (0.2)	Mod (0.7)	Low (0.2)	Mod (0.7)	Low (0.2)	Mod (0.7)	Low (0.2)	Mod (0.7)	Low (0.2)	Mod (0.7)
General Fish/Aquatic Habitat	Low (0.2)	Mod (0.7)	NA	High (1.0)	NA	NA	NA	Mod (0.6)	NA	Mod (0.6)	NA	Mod (0.6)	NA	High (0.8)	NA	High (0.8)
Flood Attenuation	Mod (0.5)	Low (0.2)	Low (0.2)	Low (0.1)	Low (0.2)	NA	Low (0.2)	Mod (0.5)	Low (0.2)	Mod (0.5)	Low (0.2)	Mod (0.5)	Low (0.2)	Mod (0.4)	Low (0.2)	Mod (0.4)
Short and Long Term Surface Water Storage	High (0.8)	NA	Low (0.3)	NA	NA	Low (0.3)	Low (0.3)	High (0.9)	Low (0.3)	High (0.9)	Low (0.3)	High (0.9)	Low (0.3)	High (0.9)	Low (0.3)	High (0.9)
Sediment, Nutrient, Toxicant Removal	High (1.0)	High (1.0)	High (1.0)	Mod (0.5)	High (1.0)	Mod (0.5)	Mod (0.5)	Low (0.3)	Mod (0.5)	Low (0.3)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.4)	Mod (0.5)	Mod (0.4)
Sediment/Shoreline Stabilization	Mod (0.7)	Mod (0.7)	NA	Mod (0.4)	High (0.9)	NA	NA	Low (0.2)	NA	Low (0.2)	NA	Low (0.2)	NA	Mod (0.6)	NA	Mod (0.6)
Production Export/Food Chain Support	High (0.8)	Mod (0.6)	Mod (0.6)	Mod (0.7)	Low (0.2)	Low (0.1)	Low (0.2)	High (0.9)	Low (0.2)	High (0.9)	Low (0.2)	High (1.0)	Low (0.2)	High (1.0)	Low (0.2)	High (1.0)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	Low (0.1)	Low (0.1)	High (1.0)	High (1.0)	High (1.0)	High (1)	High (1.0)	High (1.0)	High (1.0)	High (1)	High (1.0)	High (1)	High (1.0)
Uniqueness	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.3)	Mod (0.5)	Low (0.3)	Mod (0.5)	Low (0.3)	Mod (0.5)	Low (0.3)	Mod (0.5)	Low (0.3)	Mod (0.5)
Recreation/Education Potential	Low (0.1)	Low (0.1)	Low (0.1)	High (1.0)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.3)	Low (0.1)	Low (0.3)	Low (0.1)	Low (0.3)	Low (0.1)	Low (0.3)	Low (0.1)	Low (0.3)
Actual Points/Possible Points	6.6 / 12	5.8 / 11	4.0 / 9	6.3 / 11	2.8 / 10	2.3 / 9	2.8 / 10	6.7 / 12	2.8 / 10	6.7 / 12	2.8 / 10	7.0 / 12	2.8 / 10	7.5 / 12	2.8 / 10	7.6 / 12
% of Possible Score Achieved	55%	53%	44%	57%	28%	26%	28%	56%	28%	55%	28%	58%	28%	63%	28%	63%
Overall Category	III	III	III	II ³	IV	IV	IV	III	IV	III	IV	III	IV	III	IV	III
Total Acreage of Assessed Wetlands and Open Water within Easement (ac)	2.58	0.86	0.68	0.06	0.75	1.74	0.29	11.84	0.29	12.20	0.29	12.73	0.46	12.55	0.46	12.55
Functional Units (acreage x actual points) (fu)	17.03	4.99	2.73	0.37	2.10	4.00	0.81	79.32	0.81	81.74	0.81	89.11	1.29	94.1	1.29	95.38
Total Acreage at Site (ac)	6.67						12.13		12.49		13.02		13.01		13.01	
Total Functional Units at Site (fu)	31.22						80.13		82.55		89.92		95.39		96.67	
Net Acreage Gain (ac)	NA						5.46		5.82		6.35		6.34		6.34	
Net Functional Unit Gain (fu)	NA						48.91		51.33		58.7		64.17		65.45	

¹ The baseline assessment was performed using the 1996 MDT assessment method, of which several parameters were substantially revised and applied to the 1999 MDT assessment method. The 1999 MDT assessment method was used from 2002 to 2006. Therefore, direct comparison of pre- and post-project functions are not possible, but some general trends can be noted.

² See completed 2006 MDT functional assessment forms **Appendix B** for further detail.

³ Did not achieve Category II rating based on functional points, but did achieve Category II rating based on score for fish and wildlife habitat. This narrow fringe wetland was absent during the 2004 to 2006 delineations.

3.8 Photographs

Representative photographs were taken in 2006 from established photo-points and transect ends (**Appendix C**).

3.9 Revegetation Efforts

Wetland and riparian vegetation enhancements were implemented in 2003 and 2004. **Appendix G** presents the different planting specification for each seed mix and containerized plantings. These enhancements included drill seeding of an upland seed mix into the areas of higher topography and planting of native tree, shrub, grass and grass-like seedlings. Plants installed in the upland areas included two tree species, cottonwood and ponderosa pine (*Pinus ponderosa*), and seven shrub species including American plum, chokecherry (*Prunus virginiana*), hawthorn (*Crataegus douglasii*) serviceberry (*Amelanchier alnifolia*), snowberry (*Symphoricarpos albus*), Rocky Mountain juniper (*Juniperus scopulorum*), and woods rose (*Rosa woodsii*).

Wetland areas surrounding the excavated open water area were broadcast seeded with a custom wetland seed mix and also planted with herbaceous and woody seedlings. Vegetation planted in the wetland areas included three tree species - cottonwood, quaking aspen (*Populus tremuloides*), and water birch (*Betula occidentalis*), and four shrub species - alder (*Alnus incana*), red osier dogwood (*Cornus stolonifera*), Bebb's willow (*Salix bebbiana*) and sandbar willow (*Salix exigua*). Five herbaceous wetland species were planted along the fringe of the excavated wetland. These species included hardstem bulrush (*Scirpus microcarpus*), Nebraska sedge (*Carex nebrascensis*), beaked sedge (*Carex utriculata*), Bebb's sedge (*Carex bebbiana*), and small-fruited bulrush (*Scirpus microcarpus*).

Survival rates for native shrub plantings were assessed during the summer of 2003, 2004, 2005 and 2006. PBS&J and Salish Kootenai College (**SKC**) conducted separate survival ratings for the 2003 and 2004 plantings following initial plantings. During the 2005 and 2006 monitoring only PBS&J conducted survival ratings. Methodology employed by PBS&J included walking transects within the four planting areas and recording all living woody plantings by species.

Planting areas included the excavated wetland, upland island (C.T. 4), backwater (side) channel, and river bank / terrace. Herbaceous plantings within the excavated wetlands area were not counted due to the difficulty in distinguishing between planted and volunteer establishment. PBS&J results are recorded on the **Monitoring Form (Appendix B)** and include general qualitative descriptions of each species within the different planting areas. The percentage ratings for each species' survival were not calculated due to lack of quantifiable plantings numbers within the transect locations and the inherent inaccuracy with calculations based on total number of original plantings within our limited transect area. Plantings were assessed using several criteria including live occurrences and health. The recorded occurrences of live plants were used to estimate a general overall survival rate for each area, but were not quantified by real percentages. The initial planting numbers for 2003 and 2004 are described in the CSKT *Riparian Vegetation Enhancement – Survival Data* presented in **Appendix G**.

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Three upland plantings areas were evaluated; these areas include the upland islands, river bank terrace and along the upper banks of the backwater (side) channel. During 2006 monitoring, species survival remained similar to those observed in 2005 with an overall estimate of moderate to high rating. Woods rose and snowberry, which had the highest survival following the initial plantings, were healthy with vigorous new growth. The other species including hawthorn, chokecherry, serviceberry, ponderosa pine and American plum were less healthy and had low occurrences. Survival ratings were considered low, following the 2004 planting season, due to a high mortality experienced that season. The remaining live plantings observed in 2005 and 2006 are successfully surviving at this site.

One wetland planting area was evaluated; along the south slopes of the excavated wetland. Survival rates for the wetland plantings were high with sandbar willow and cottonwood having the highest overall estimated rates. Several other species including Bebb's willow, red osier dogwood and alder were present but at lower counts. Several woody species that had low survival rates during the 2003 monitoring were replanted in 2004. The replacement plants are doing well and exhibited an overall estimated high survival rate in 2006. Approximately 2000 willow cuttings were installed around the fringe of excavated wetland and show vigorous seasonal growth.

3.10 Maintenance Needs/Recommendations

Several Category 1 noxious weeds were still present but at low cover values: Canada thistle, Dalmatian toadflax hound's-tongue, oxeye daisy, St. John's wort, and spotted knapweed. Category 3 yellowflag iris and Eurasian water-milfoil were also present within the mitigation site. The Confederated Salish and Kootenai Tribes are diligently following a five year (2005 to 2010) vegetation management plan that includes invasive weed control and revegetation efforts. Weed control activities were observed during the mid-season visits including herbicide applications, minor grazing and mowing. Weed control activities seem to be working with observations of lower cover values for previous weedy areas. Refer to **Appendix G** for the *CSKT Vegetation Management Plan – Hoskin's Landing, Highway 200 Wetland Mitigation*.

Evidence of livestock accessing the site was observed during a fall 2006 visit. An electric fence was periodically put into place, running parallel with the river setback from the shoreline. Fences were removed prior to seasonal flows and re-installed during August to exclude livestock (Price 2006). The drier upland grass meadows were grazed and trampling within the wetlands was observed. Minor browse on the woody plantings within the wetland area was also observed.

3.11 Current Credit Summary

At this time approximately 13.01 acres of wetland occur on the mitigation site. Subtracting the original 6.67 acres of pre-project wetlands from this total yields a current net of approximately 6.35 wetland acres. It is likely that additional acreage will form with additional time and more normal precipitation. Additionally, approximately 65.45 functional units have been gained at the site, although pre- and post-construction functional assessment methods slightly differed.

4.0 REFERENCES

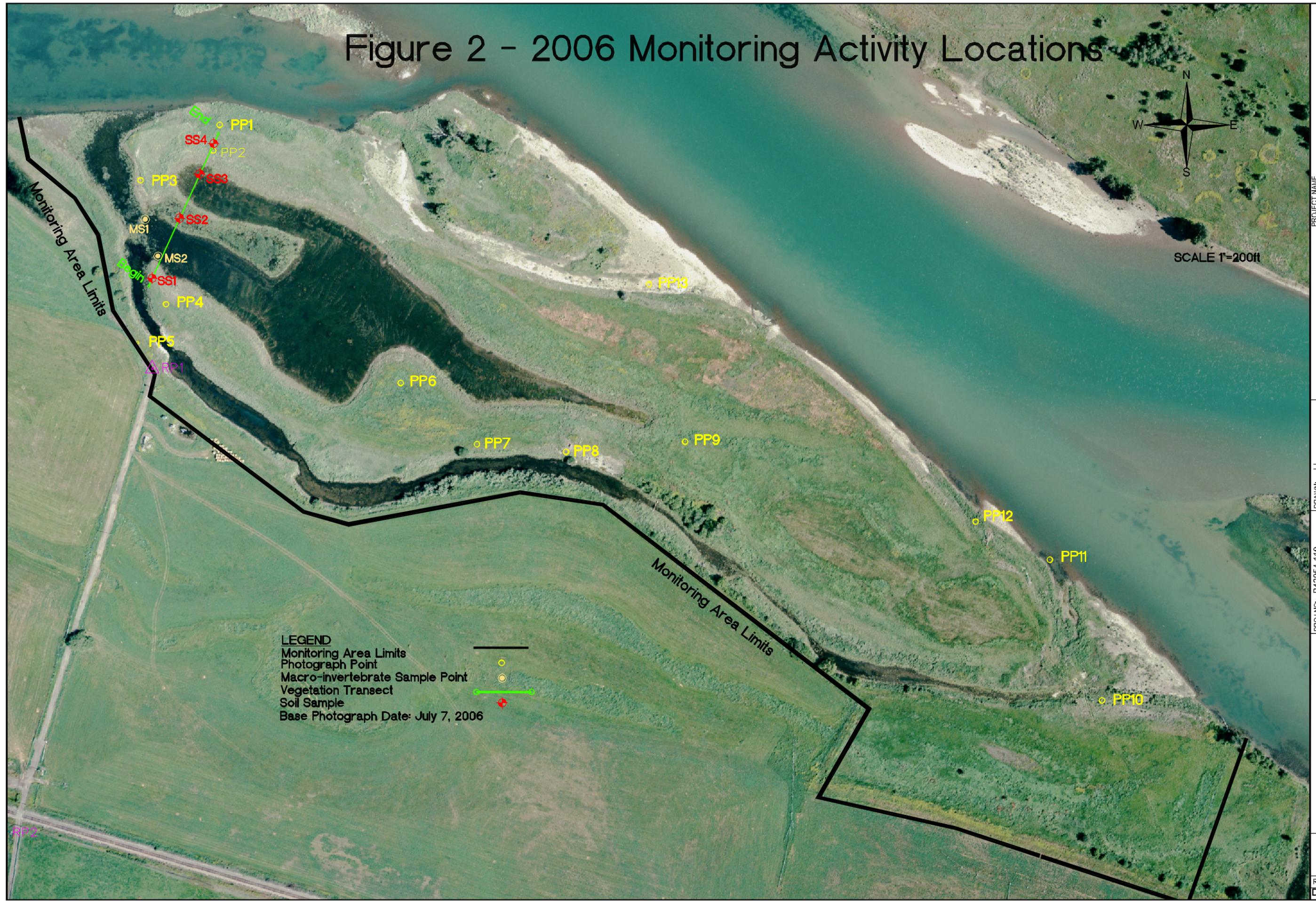
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Appendix A

FIGURES 2 & 3

*MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana*

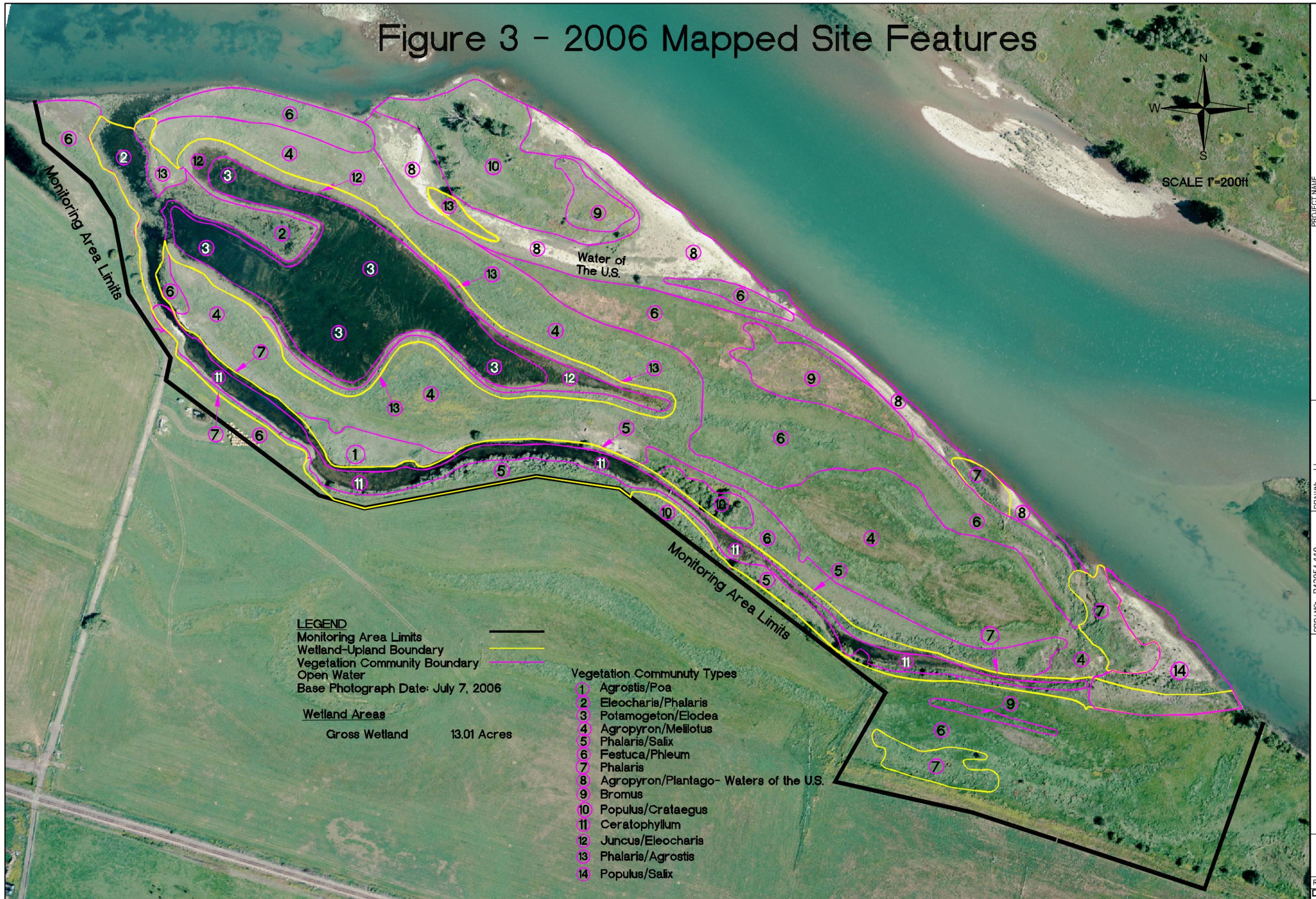
Figure 2 - 2006 Monitoring Activity Locations



LEGEND
 Monitoring Area Limits
 Photograph Point
 Macro-invertebrate Sample Point
 Vegetation Transect
 Soil Sample
 Base Photograph Date: July 7, 2006

PROJECT NAME MDT Hoskin's Landing Wetland Mitigation		DRAWING TITLE 2006 Monitoring Activity Locations	
PROJ NO: B43054.110	DRAWN: LL	CHECKED: J.B	APP'D: J.B
LOCATION: Dixon, MT	PROJ MGR: J. Berglund	FILE NAME: L:\330054.1\0Hoskins\dwg\TASK110_2006.dwg	
SCALE: 1" = 200'	1120 Cedar Missoula, MT 59802		
PBSJ			
FIGURE 2 OF 3			
REV - Dec/18/2006			

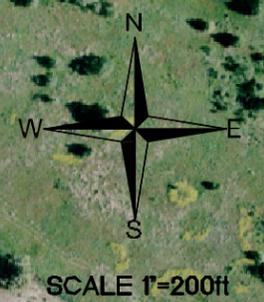
Figure 3 - 2006 Mapped Site Features



LEGEND
 Monitoring Area Limits ———
 Wetland-Upland Boundary ———
 Vegetation Community Boundary ———
 Open Water
 Base Photograph Date: July 7, 2006

Wetland Areas
 Gross Wetland 13.01 Acres

- Vegetation Community Types**
- 1 Agrostis/Poa
 - 2 Eleocharis/Phalaris
 - 3 Potamogeton/Elodea
 - 4 Agropyron/Mellilotus
 - 5 Phalaris/Salix
 - 6 Festuca/Phleum
 - 7 Phalaris
 - 8 Agropyron/Plantago- Waters of the U.S.
 - 9 Bromus
 - 10 Populus/Crataegus
 - 11 Ceratophyllum
 - 12 Juncus/Eleocharis
 - 13 Phalaris/Agrostis
 - 14 Populus/Salix



PROJECT NAME MDT Hoskin's Landing Wetland Mitigation	
DRAWING TITLE 2006 Mapped Site Features	
PROJ NO: B43054.110	DRAWN: LL
LOCATION: Dixon, MT	PROJ MGR: J. Berglund
SCALE: 1"=200'	CHECKED: GH APP'VD: JB
FILE NAME: L:\330054.1\0Hoskins\dwg\TASK110_2006.dwg	
1120 Cedar Missoula, MT 59802	
	
FIGURE 3 OF 3	
REV - Dec/18/2006	

Appendix B

2006 WETLAND MITIGATION SITE MONITORING FORM

2006 BIRD SURVEY FORM

2006 COE WETLAND DELINEATION FORMS

2006 MDT FUNCTIONAL ASSESSMENT FORM

MDT Wetland Mitigation Monitoring

Hoskins Landing

Dixon, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Hoskins Landing Project Number: B43054.00 0110 Assessment Date: 08/02/06
 Location: N. of Dixon, MT MDT District: Missoula Milepost:
 Legal description: T: 18 R: 21 Section: 18 Time of Day: Morning to late afternoon
 Weather Conditions: Hazy Person(s) conducting the assessment: Greg Howard
 Initial Evaluation Date: 09 / 04 / 02 Visit #: 5 Monitoring Year: 2006
 Size of evaluation area: 48 acres Land use surrounding wetland: Agriculture; alfalfa & cattle grazing

HYDROLOGY

Surface Water Source: Flathead River

Inundation: Present Absent Average depths: 1.5 ft Range of depths: 0 – 2 ft

Assessment area under inundation: 40 %

Depth at emergent vegetation-open water boundary: 0.5 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.): Drift lines present around excavated wetland. Mitigation site has seasonal high water events; inundation due to flooding of the backwater channel and excavated wetlands.

Groundwater

Monitoring wells: Present Absent

Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

Additional Activities Checklist:

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

COMMENTS/PROBLEMS: Mitigation site had indications of weed control activities such as mowing and herbicide applications. Backwater channel w / evidence of seasonal flooding; scour marks and sediment deposition on east side. Spring bird visit revealed seasonal flow depths that reached near full holding capacity within the excavated wetland.

VEGETATION COMMUNITIES

Community No.: 1 Community Title (main species): Agrostis / Poa

Dominant Species	% Cover	Dominant Species	% Cover
<i>Agrostis alba</i>	60	<i>Phleum pratense</i>	T
<i>Poa pratensis</i>	20	<i>Agropyron repens</i>	P
<i>Taraxacum officinalis</i>	P	<i>Cirsium arvense</i>	T
<i>Festuca pratensis</i>	T		
<i>Trifolium pratense</i>	P		
<i>Plantago lanceolata</i>	10		

COMMENTS/PROBLEMS: Area of pre-existing pasture undisturbed during construction efforts. Removal of livestock has allowed the dominant species to flourish and identifiable for community type mapping.

Community No.: 2 Community Title (main species): Eleocharis / Phalaris

Dominant Species	% Cover	Dominant Species	% Cover
<i>Scirpus acutus</i>	10	<i>Sagittaria latifolia</i>	20
<i>Scirpus validus</i>	P	<i>Carex retrorsa</i>	P
<i>Phalaris arundinacea</i>	30		
<i>Eleocharis palustris</i>	50		
<i>Potamogeton natans</i>	10		

COMMENTS/PROBLEMS: Undisturbed emergent wetlands located on W. side of site. Type 2 is connected to the outlet of the southern backwater channel. Area is surrounded by excavated wetlands. Wetland inundated during mid-season visit.

Community No.: 3 Community Title (main species): Potamogeton / Elodea

Dominant Species	% Cover	Dominant Species	% Cover
<i>Potamogeton amplifolius</i>	40	<i>Veronica americana</i>	P
<i>Elodea canadensis</i>	10	<i>Juncus ensifolius</i>	T
<i>Potamogeton crispus</i>	P	<i>Myriophyllum spicatum</i>	10
<i>Potamogeton natans</i>	T		

COMMENTS/PROBLEMS: Areas of aquatic vegetation located within the excavated wetlands. Shallow water on east side of excavated wetlands dominated by American speedwell (*Veronica americana*). The west side of type 3 consisting of shallow water dominated by *Myriophyllum spicatum*.

Additional Activities Checklist:

X Record and map vegetative communities on air photo

COMMENTS: Open water removed from mapping.

VEGETATION COMMUNITIES

Community No.: 4 Community Title (main species): Agropyron / Melilotus

Dominant Species	% Cover	Dominant Species	% Cover
<i>Plantago lanceolata</i>	T	<i>Helianthus annuus</i>	P
<i>Plantago major</i>	P	<i>Lepidium perfoliatum</i>	P
<i>Cirsium arvense</i>	P	<i>Chrysanthemum leucanthemum</i>	T
<i>Verbascum thapsus</i>	T	<i>Centaurea maculosa</i>	T
<i>Agropyron repens</i>	40	Plantings	10
<i>Achillea millefolium</i>	10	<i>Coreopsis atkinsoniana</i>	P
<i>Elymus trachycaulus</i>	20		

COMMENTS/PROBLEMS: Constructed upland slopes w/ re-contoured topography and native shrub plantings. Area mostly dominated by *Agropyron repens* and other invasive or disturbance related species. Three Montana State listed noxious weeds; *Centaurea maculosa*, *Chrysanthemum leucanthemum* & *Cirsium arvense*. Signs of recent weed control activities conducted this season.

Community No.: 5 Community Title (main species): Phalaris / Salix

Dominant Species	% Cover	Dominant Species	% Cover
<i>Phalaris arundinacea</i>	60	<i>Juncus ensifolius</i>	T
<i>Salix exigua</i>	30	<i>Eleocharis acicularis</i>	P
<i>Juncus balticus</i>	P	<i>Salix bebbiana</i>	T
<i>Scirpus acutus</i>	T		
<i>Cornus stolonifera</i>	T		

COMMENTS/PROBLEMS: Undisturbed side channel running along south edge of project boundary. Channel w/ stagnate water, no flowing inlet or outlet, except during seasonally high flows. Channel vegetation consisting mostly of aquatic bed, emergent and scrub-shrub types.

Community No.: 6 Community Title (main species): Festuca / Phleum

Dominant Species	% Cover	Dominant Species	% Cover
<i>Phleum pratense</i>	20	<i>Rosa woodsii</i>	T
<i>Agropyron repens</i>	20	<i>Symphoricarpos albus</i>	T
<i>Taraxacum officinale</i>	P	<i>Agrostis alba</i>	10
<i>Cirsium arvense</i>	T	<i>Festuca pratensis</i>	30
<i>Rumex crispus</i>	T	<i>Centaurea maculosa</i>	T

COMMENTS/PROBLEMS: Areas of pre-existing upland pasture. Two stated listed noxious weeds found in this type; *Centaurea maculosa* & *Cirsium arvense*. This area incorporates planting units along the edge of the C.T # 8 near the river.

Additional Activities Checklist:

X Record and map vegetative communities on air photo

COMMENTS:

VEGETATION COMMUNITIES

Community No.: 7 Community Title (main species): Phalaris

Dominant Species	% Cover	Dominant Species	% Cover
<i>Populus trichocarpa</i>	10	<i>Taraxacum officinale</i>	P
<i>Salix exigua</i>	20	<i>Hypericum perforatum</i>	P
<i>Rumex crispus</i>	10		
<i>Agrostis alba</i>	P		
<i>Phalaris arundinacea</i>	60		

COMMENTS/PROBLEMS: This area receives seasonal flooding and is located adjacent to river. This site has experienced heavy grazing in the past. Removal of livestock grazing has left a vigorous canary reedgrass population. *Populus trichocarpa* seedlings established in 2002 are increasing in cover and density. Average sapling height 3-4 feet tall. An additional Montana state listed noxious weed St. Johnswort (*Hypericum perforatum*) was observed within the Community Type during 2005 monitoring.

Community No.: 8 Community Title (main species): Agropyron / Plantago

Dominant Species	% Cover	Dominant Species	% Cover
<i>Plantago major</i>	P	<i>Agropyron repens</i>	10
<i>Plantago lanceolata</i>	10	<i>Chrysanthemum leucanthemum</i>	T
<i>Verbascum thapsus</i>	T	<i>Centaurea maculosa</i>	10
<i>Populus trichocarpa</i>	10	<i>Agrostis alba</i>	10
<i>Artemisia ludoviciana</i>	10	<i>Linaria dalmatica</i>	T

COMMENTS/PROBLEMS: Area adjacent to Flathead River, cobble and gravel substrate. Community type #8 considered Waters of the U.S. Increasing vegetation cover, mostly invasive or disturbance related species. Size and height of *Populus trichocarpa* saplings increased. An increase in spotted knapweed observed during 2005 monitoring. Montana state listed noxious weed Dalmatian toadflax (*Linaria dalmatica*) observed.

Community No.: 9 Community Title (main species): Bromus

Dominant Species	% Cover	Dominant Species	% Cover
<i>Centaurea maculosa</i>	T	<i>Chenopodium album</i>	P
<i>Sisymbrium altissimum</i>	T	<i>Bromus</i> spp.	50
<i>Lepidium perfoliatum</i>	T	<i>Bromus tectorum</i>	10
<i>Malva neglecta</i>	T	<i>Agropyron repens</i>	10

COMMENTS/PROBLEMS: Area previously dominated by *Centaurea maculosa* in 2003. Weed control activities have been conducted to eradicate invasive species within the community type. Increase in *Bromus tectorum* and other brome species following control activities.

Additional Activities Checklist:

Record and map vegetative communities on air photo

COMMENTS:

VEGETATION COMMUNITIES

Community No.: 10 Community Title (main species): Populus / Crataegus

Dominant Species	% Cover	Dominant Species	% Cover
<i>Crataegus douglasii</i>	20	<i>Festuca pratensis</i>	P
<i>Prunus americana</i>	10	<i>Phleum pratense</i>	P
<i>Rosa woodsii</i>	P	<i>Agropyron repens</i>	20
<i>Cornus stolonifera</i>	P	<i>Symphoricarpos albus</i>	P
<i>Populus trichocarpa</i>	30	<i>Centaurea maculosa</i>	P

COMMENTS/PROBLEMS: Mature *Populus trichocarpa* & *Crataegus douglasii* found along higher terrace, adjacent to river & backwater channel. Understory layer consisting of pasture grasses and some invasive species. A few small shrub patches present along backwater channel.

Community No.: 11 Community Title (main species): Ceratophyllum

Dominant Species	% Cover	Dominant Species	% Cover
<i>Ceratophyllum demersum</i>	40	<i>Myriophyllum spicatum</i>	P
<i>Equisetum hyemale</i>	P		
<i>Eleocharis acicularis</i>	P		
<i>Juncus balticus</i>	P		
<i>Phalaris arundinacea</i>	T		

COMMENTS/PROBLEMS: Aquatic bed habitat dominated by *Ceratophyllum demersum*, standing water in channel. Channel experiences seasonal high flows. Evidence of high flows; scour marks, drift lines and sediment depositions on upper terrace. Standing water throughout the season. Some *Myriophyllum spicatum* identified within this wetland.

Community No.: 12 Community Title (main species): Juncus / Eleocharis

Dominant Species	% Cover	Dominant Species	% Cover
<i>Juncus ensifolius</i>	30	<i>Rumex crispus</i>	T
<i>Eleocharis palustris</i>	10	Willow sprigs (<i>Salix</i>)	10
<i>Agrostis alba</i>	10	<i>Prunella vulgaris</i>	T
<i>Phalaris arundinacea</i>	10	<i>Cirsium arvense</i>	T
<i>Eleocharis acicularis</i>	10	<i>Coreopsis atkinsoniana</i>	P
<i>Scirpus acutus</i>	T	<i>Sagittaria latifolia</i>	T
<i>Polygonum amphibium</i>	T		

COMMENTS/PROBLEMS: Emergent wetland vegetation type developing along the fringes of excavated wetland. Shrub & herbaceous plantings installed during spring 2003 and 2004. Increase in wetland species diversity and cover values during the 2005 monitoring.

Additional Activities Checklist:

Record and map vegetative communities on air photo

COMMENTS:

VEGETATION COMMUNITIES

Community No.: 13 Community Title (main species): Phalaris / Agrostis

Dominant Species	% Cover	Dominant Species	% Cover
<i>Phalaris arundinacea</i>	50	<i>Agropyron repens</i>	P
<i>Agrostis alba</i>	20	<i>Salix exigua</i>	10
<i>Eleocharis palustris</i>	T	<i>Salix lutea</i>	T
<i>Alopecurus pratensis</i>	T	Plantings (<i>Cornus</i> & <i>Populus</i>)	P
<i>Plantago major</i>	P		

COMMENTS/PROBLEMS: Small area of vegetation developing in the backwater channel on the west side of excavated wetlands. Community # 13 also located adjacent to side slopes of excavated wetland.

Community No.: 14 Community Title (main species): Populus / Salix

Dominant Species	% Cover	Dominant Species	% Cover
<i>Populus trichocarpa</i>	50	<i>Plantago lanceolata</i>	P
<i>Salix exigua</i>	20	<i>Crataegus douglasii</i>	T
<i>Phalaris arundinacea</i>	10	<i>Helenium autumnale</i>	T
<i>Agropyron repens</i>	P	<i>Artemisia ludoviciana</i>	T
<i>Centaurea maculosa</i>	P		

COMMENTS/PROBLEMS: C.T. # 14 was previously mapped as C.T. # 7 & 8. Portions of C.T. # 14 serve as the inlet to backwater channel with an increase in vegetative cover dominated by black cottonwood & willow.

Additional Activities Checklist:

Record and map vegetative communities on air photo

COMMENTS:

COMPREHENSIVE VEGETATION LIST

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
<i>Acer negundo</i>	10	<i>Juncus ensifolius</i>	4,5,12
<i>Agropyron repens</i>	4,6,8,9,10,13,14,15	<i>Juniperus scopulorum*</i>	4
<i>Agrostis alba</i>	6,7,8,12,13,14,15	<i>Lepidium perfoliatum</i>	4,6,9
<i>Achillea millefolium</i>	4,6,14	<i>Linaria dalmatica</i>	8
<i>Alnus incana*</i>	12	<i>Malva neglecta</i>	4,9
<i>Alopecurus pratensis</i>	6	<i>Melilotus alba</i>	14
<i>Amaranthus retroflexus</i>	6	<i>Melilotus officinalis</i>	4,6,10
<i>Amelanchier alnifolia*</i>	4	<i>Mentha arvensis</i>	2
<i>Artemisia ludoviciana</i>	4,8	<i>Myosotis scorpioides</i>	2
<i>Bromus japonicus</i>	6	<i>Myriophyllum spicatum</i>	3
<i>Bromus tectorum</i>	9	<i>Oenothera villosa</i>	4
<i>Carex bebbiana</i>		<i>Panicum capillare</i>	8
<i>Carex lanuginosa</i>	2	<i>Phalaris arundinacea</i>	2,5,7,11,12,13
<i>Carex nebrascensis</i>		<i>Phleum pratense</i>	6,10,15
<i>Carex retrorsa</i>	2	<i>Pinus ponderosa*</i>	4
<i>Carex utriculata</i>		<i>Plantago lanceolata</i>	4,8,15
<i>Centaurea maculosa</i>	4,6,8,9,10	<i>Plantago major</i>	4,8,13
<i>Ceratophyllum demersum</i>	11	<i>Poa pratensis</i>	6,15
<i>Chenopodium album</i>	4,6,9	<i>Polygonum amphibium</i>	2,11,12
<i>Chrysanthemum leucanthemum</i>	4,8	<i>Polygonum aviculare</i>	4
<i>Cirsium arvense</i>	4,6,12,15	<i>Populus tremuloides*</i>	4
<i>Cirsium vulgare</i>	4,6	<i>Populus trichocarpa**</i>	7,8,10
<i>Coreopsis atkinsoniana</i>	4,8	<i>Potamogeton amplifolius</i>	3
<i>Cornus stolonifera**</i>	5,10	<i>Potamogeton crispus</i>	3
<i>Crataegus douglasii</i>	10	<i>Potamogeton natans</i>	2,3
<i>Cynoglossum officinale</i>	4,6	<i>Prunella vulgaris</i>	12
<i>Dactylis glomerata</i>	6	<i>Prunus americana**</i>	10
<i>Dipsacus fullonum</i>	12	<i>Rosa woodsii</i>	6,10
<i>Eleocharis acicularis</i>	2,5,11,12	<i>Rumex crispus</i>	2,4,6,7,12
<i>Eleocharis palustris</i>	2,4,12,13	<i>Sagittaria latifolia</i>	2
<i>Elodea canadensis</i>	3	<i>Salix bebbiana</i>	5
<i>Elymus trachycaulus</i>	4	<i>Salix exigua**</i>	5,7,12
<i>Equisetum arvense</i>	2,4,8,12	<i>Scirpus acutus</i>	2,5,12
<i>Equisetum hyemale</i>	2,11	<i>Scirpus microcarpus</i>	2
<i>Festuca pratensis</i>	6,15	<i>Scirpus validus</i>	2
<i>Erodiun cicutarium</i>	4,8,10	<i>Sisymbrium altissimum</i>	6,8,9,14
<i>Gnaphalium palustre</i>	4,8	<i>Solanum dulcamara</i>	4,6
<i>Helianthus annuus</i>	4,12	<i>Solidago missouriensis</i>	10
<i>Helenium autumnale</i>	12	<i>Symphoricarpos albus**</i>	6,10
<i>Hippuris vulgaris</i>	2	<i>Taraxacum officinalis</i>	4,6,7,8,15
<i>Hypericum perforatum</i>	7	<i>Trifolium pratense</i>	15
<i>Iris pseudacorus</i>	5	<i>Verbascum thapsus</i>	4,6,8
<i>Juncus balticus</i>	5,11,12	<i>Veronica americana</i>	12

* Species planted during 2003 & 2004 riparian vegetation enhancements.

** Species observed during vegetation survey and also planted during 2003 & 2004 riparian vegetation enhancements.

Bolded species new to the list for 2006.

COMMENTS/PROBLEMS: Three new species identified during the 2006 monitoring: climbing nightshade (*Solanum dulcamara*), common sneezeweed (*Helenium autumnale*) and Fullers teasel (*Dipsacus fullonum*).

PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Comments
Created Pond		
<i>Populus trichocarpa</i>	280	During the 2006 monitoring, species survival remained similar to those observed in 2005 based on visual estimates. Sandbar willow, cottonwood, dogwood and alder were healthy with new vigorous growth. Sandbar willow shoot growth is above 5 ft. tall. Willows spreading by rhizomes. Other species including water birch and aspen were not observed or, respectfully, recorded at low densities with less vigor. Overall survival ratings are considered moderate to high based on visual assessment. Area sustaining minor livestock browse.
<i>Betula occidentalis</i>	378	
<i>Populus tremuloides</i>	291	
<i>Alnus incana</i>	241	
<i>Salix exigua</i>	1719	
<i>Salix bebbiana</i>	684	
<i>Cornus stolonifera</i>	800	
Side Channel		
<i>Populus trichocarpa</i>	100	During the 2006 monitoring, species survival remained similar to those observed in 2005 based on visual estimates. Woods rose was healthy with new stem growth. Other species including American plum and cottonwood were less healthy, showing signs of stress with little growth and discolored leaves. Volunteer hawthorn was observed during 2006. Sandbar willow, dogwood, alder, water birch, serviceberry, aspen and ponderosa pine were not observed along the side channel during 2006 monitoring. Plantings areas difficult to assess due to tall grass and overgrown white sweetclover. Overall survival ratings are considered moderate based on visual assessment.
<i>Betula occidentalis</i>	75	
<i>Populus tremuloides</i>	50	
<i>Pinus ponderosa</i>	103	
<i>Alnus incana</i>	50	
<i>Salix exigua</i>	125	
<i>Cornus stolonifera</i>	200	
<i>Rosa woodsii</i>	50	
<i>Amelanchier alnifolia</i>	25	
Upland Island		
<i>Populus trichocarpa</i>	25	During the 2006 monitoring, species survival remained similar to those observed in 2005 based on visual estimates. Woods rose and snowberry were healthy with new stem growth. Other species including hawthorn, serviceberry, and cottonwood were less healthy with little growth and discolored leaves. Overall survival ratings are considered low with a high mortality following the 2004 planting season. The remaining live plantings observed in 2005 and 2006 are successfully surviving at this site.
<i>Pinus ponderosa</i>	100	
<i>Juniperus scopulorum</i>	20	
<i>Rosa woodsii</i>	300	
<i>Symphoricarpos albus</i>	100	
<i>Amelanchier alnifolia</i>	125	
<i>Crataegus douglasii</i>	100	
River Bank		
<i>Populus trichocarpa</i>	--	During the 2006 monitoring, species survival remained similar to those observed in 2005 based on visual estimates. Initial planting quantities for the river bank area were not included in CSKT survival data and therefore not included. Ponderosa pine, woods rose and snowberry were healthy with new vigorous growth. Snowberry spreading by rhizomes. Ponderosa pine sapling reaching 2 – 3 ft tall. Cottonwood volunteer saplings dominate planting area and have vigorous growth. Other species including hawthorn and dogwood were recorded in low numbers with less vigor. Overall survival ratings considered moderate to high based on visual assessment.
<i>Pinus ponderosa</i>	--	
<i>Cornus stolonifera</i>	--	
<i>Rosa woodsii</i>	--	
<i>Crataegus douglasii</i>	--	
<i>Symphoricarpos albus</i>	--	

COMMENTS/PROBLEMS: The above species were planted during 2003 & 2004 seasons. Four plantings areas were assessed by PBS&J during 2006 monitoring: upland C.T. # 4, excavated wetland, backwater channel, and river bank / terrace. Transects were walked, live plants recorded per species. Species survival ratings were not calculated due to lack of quantifiable plantings numbers within the transect locations and the inherit inaccuracy with calculations based on total number of original plantings. Plantings were assessed using several criteria including live occurrences and health. The recorded occurrences of live plants were used to estimate a general overall survival rate for each area, but were not quantified by real percentages. The number of species observed during the assessment does not reflect the total of number of species planted. Refer to **Appendix G** for the total number of plants installed and initial survival data for the 2003 and 2004 monitoring periods assessed by CSKT.

WILDLIFE

BIRDS

See attached Bird Survey – Field Data Sheet (Spring & Fall)

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		X			
Painted Turtle	1				

Additional Activities Checklist:

X Macroinvertebrate sampling (if required)

COMMENTS/PROBLEMS: Macroinvertebrate samples collected and location marked on map.

PHOTOGRAPHS

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

Checklist:

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

Location	Photo	Photograph Description	Compass Reading
1	1	Picture looking S. at upland, emergent vegetation and open water area.	180°
2	2	Picture looking N. at emergent vegetation and open water area.	180°
3	3	Picture looking E. at emergent vegetation that existed before construction.	90°
4	4	Panoramic view running W. to E., created open water area.	315° – 135°
5	5	Picture looking E. at backwater side channel.	90°
6	6	Panoramic view running W. to E., emergent wetlands, open water area & upland.	315° – 90°
7	7	Picture looking E. at side channel & area where berm was removed.	90°
8	8	Picture looking E. at side channel & area of high water disturbance.	90°
9	9a	Picture looking W. at upland, emergent wetlands & created open water areas.	315°
9	9b	Picture looking N. at upland pasture.	0°
9	9c	Picture looking S. at riparian vegetation along side channel.	180°
10	10	Picture looking W. at inlet to backwater side channel.	270° – 135°
11	11	Picture looking NW. along N. side of project boundary & Flathead River.	315°
12	12	Picture looking NW. along N. side of site, areas where berm was removed.	315°
13	13	Picture looking W. at empty floodplain channel near river.	315°

COMMENTS/PROBLEMS: All pictures were taken with a digital camera.

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: _____

WETLAND DELINEATION

At each site conduct the items on the checklist below:

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

COMMENTS/PROBLEMS: _____

FUNCTIONAL ASSESSMENT

See attached completed MDT Montana Wetland Assessment Method 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 build or installed to impound water or control water flow into or out of the wetland?

YES ___ NO X

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

If no, describe the problems below.

COMMENTS/PROBLEMS: _____

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Hoskins Landing Date: 08/02/06 Examiner: Greg Howard Transect # 1

Approx. transect length: 390 ft Compass Direction from Start (Upland): 45°

Vegetation type 1:		Festuca/Phleum (Community No. 6)	
Length of transect in this type:	45		feet
Species:		Cover:	
Plantago lanceolata		T	
Cirsium arvense		P	
Agrostis alba		20	
Phleum pratense		P	
Festuca pratensis		40	
Agropyron repens		P	
Rumex crispus		T	
Phalaris arundinacea		P	
Equisetum arvense		P	
Total Vegetative Cover:		70%	

Vegetation type 2:		Juncus/Eleocharis (Community No. 12)	
Length of transect in this type:	24		feet
Species:		Cover:	
Eleocharis acicularis		60	
Juncus ensifolius		10	
Eleocharis palustris		P	
Scirpus acutus		P	
Plantago major		T	
Rumex crispus		T	
Salix exigua		T	
Populus trichocarpa		T	
Sagittaria latifolia		T	
Helenium autumnale		T	
Total Vegetative Cover:		80%	

Vegetation type 3:		Potamogeton/Elodea (Community No. 3)	
Length of transect in this type:	84		feet
Species:		Cover:	
Eleocharis acicularis		T	
Elodea canadensis		T	
Potamogeton amplifolius		T	
Eleocharis palustris		T	
Potamogeton crispus		T	
Potamogeton natans		20	
Myriophyllum spicatum		70	
Scirpus acutus		T	
Eleocharis palustris		T	
Total Vegetative Cover:		95%	

Vegetation type 4:		Juncus/Eleocharis (Community No. 12)	
Length of transect in this type:	5		feet
Species:		Cover:	
Eleocharis acicularis		10	
Juncus ensifolius		T	
Eleocharis palustris		30	
Scirpus microcarpus		T	
Plantago major		P	
Phalaris arundinacea		P	
Total Vegetative Cover:		75%	

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Hoskins Landing Date: 08/02/06 Examiner: Greg Howard Transect # 1

Approx. transect length: 390 ft Compass Direction from Start (Upland): 45°

Vegetation type 5:		Eleocharis/Phalaris (Community No. 2)	
Length of transect in this type:	86		feet
Phalaris arundinacea		50	
Eleocharis palustris		P	
Hippuris vulgaris		P	
Scirpus acutus		30	
Sagittaria latifolia		P	
Veronica americana		P	
Potamogeton natans		P	
Rumex crispus		T	
Myosotis scorpioides		T	
Equisetum arvense		T	
Carex retrorsa		P	
Total Vegetative Cover:		95%	

Vegetation type 6:		Juncus/Eleocharis (Community No. 12)	
Length of transect in this type:	6		feet
Species:		Cover:	
Eleocharis acicularis		10	
Juncus ensifolius		T	
Eleocharis palustris		50	
Scirpus acutus		T	
Plantago major		T	
Coreopsis atkinsoniana		T	
Sagittaria latifolia		T	
Total Vegetative Cover:		65%	

Vegetation type 7:		Potamogeton/Elodea (Community No. 3)	
Length of transect in this type:	45		feet
Species:		Cover:	
Eleocharis acicularis		P	
Myriophyllum spicatum		60	
Eleocharis palustris		10	
Potamogeton natans		P	
Total Vegetative Cover:		75%	

Vegetation type 8:		Juncus/Eleocharis (Community No. 12)	
Length of transect in this type:	17		feet
Species:		Cover:	
Eleocharis acicularis		30	
Juncus ensifolius		P	
Eleocharis palustris		20	
Scirpus acutus		T	
Plantago major		P	
Coreopsis atkinsoniana		20	
Total Vegetative Cover:		75%	

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Hoskins Landing Date: 08/02/06 Examiner: Greg Howard Transect # 1

Approx. transect length: 390 ft Compass Direction from Start (Upland): 45°

Vegetation type 9:		Agropyron/Melilotus (Community No. 4)	
Length of transect in this type:	45	feet	
Species:		Cover:	
Phalaris arundinacea		10	
Plantago lanceolata		P	
Polygonum amphibium		T	
Scirpus acutus		T	
Agropyron repens		30	
Cirsium arvense		T	
Plantago major		T	
Coreopsis atkinsoniana		P	
Total Vegetative Cover:		50%	

Vegetation type 10:		Festuca/Phleum (Community No. 6)	
Length of transect in this type:	33	feet	
Species:		Cover:	
Festuca pratensis		P	
Agropyron repens		T	
Cirsium arvense		P	
Verbascum thapsus		T	
Phalaris arundinacea		50	
Agrostis alba		10	
Plantago major		10	
Total Vegetative Cover:		70%	

Vegetation type :			
Length of transect in this type:		feet	
Species:		Cover:	
Total Vegetative Cover:			

Vegetation type :			
Length of transect in this type:		feet	
Species:		Cover:	
Total Vegetative Cover:			

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

Project/Site: <u>Hoskins Landing</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Greg Howard</u>	Date: <u>08/02/06</u> County: <u>Sanders</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>Upland</u> Transect ID: <u>T1</u> Plot ID: <u>1</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1	<i>Plantago lanceolata</i>	H	FAC	9	
2	<i>Cirsium arvense</i>	H	FACU+	10	
3	<i>Phleum pratense</i>	H	FACU	11	
4	<i>Agropyron repens</i>	H	FACU+	12	
5	<i>Agrostis alba</i>	H	FACU	13	
6	<i>Festuca pratensis</i>	H	FAC+	14	
7	<i>Phalaris arundinacea</i>	H	FACW	15	
8				16	

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/7 = 33%

Upland pasture along the outer fringes of excavated wetland slopes.

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> - </u> (in.) Depth to Free Water in Pit: <u> - </u> (in.) Depth to Saturated Soil: <u> - </u> (in.)	
Remarks: No evidence of hydrology. Soil dry and crumbly, not saturated or moist at the time of inspection.	

SOILS

Map Unit Name	Horseplains-riverwash complex	Drainage Class:	
(Series and Phase):		Field Observations	
Taxonomy (Subgroup):		Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 2	A	10 YR 3/2	-	-	Loam
2 – 12	B1	10 YR 4/2	-	-	Silty Loam
12+	B2	10 YR 5/2	-	-	Silty Loam

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

Marginal hydric indicators, slight evidence of hydric conditions with low-chroma colors.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Remarks:
 Sampling point considered within an upland area. Sampling point located near the beginning of vegetation transect within upland.

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

Project/Site: <u>Hoskins Landing</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Greg Howard</u>	Date: <u>08/02/06</u> County: <u>Sanders</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u> x </u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u> X </u> No Is the area a potential Problem Area?: <u> </u> Yes <u> X </u> No (If needed, explain on reverse.)	Community ID: <u>Emergent</u> Transect ID: <u>T1</u> Plot ID: <u>2</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 <i>Eleocharis acicularis</i>	H	OBL	9		
2 <i>Juncus ensifolius</i>	H	FACW	10		
3 <i>Eleocharis palustris</i>	H	OBL	11		
4 <i>Scirpus acutus</i>	H	OBL	12		
5 <i>Plantago major</i>	H	FACU+	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/5 = 80%

Area dominated by hydrophytic vegetation. Developing emergent vegetation type along outer fringe of excavated wetland.

HYDROLOGY

<u> </u> Recorded Data (Describe in Remarks): <u> </u> Stream, Lake, or Tide Gauge <u> </u> Aerial Photographs <u> </u> Other <u> x </u> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <u> x </u> Inundated <u> </u> Saturated in Upper 12 Inches <u> </u> Water Marks <u> </u> Drift Lines <u> </u> Sediment Deposits <u> </u> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <u> </u> Oxidized Root Channels in Upper 12 Inches <u> </u> Water-Stained Leaves <u> </u> Local Soil Survey Data <u> </u> FAC-Neutral Test <u> </u> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> - </u> (in.) Depth to Free Water in Pit: <u> - </u> (in.) Depth to Saturated Soil: <u> 0 </u> (in.)	
Remarks: Hydrology indicators present with saturated soils to ground surface and minor inundation.	

SOILS

Map Unit Name (Series and Phase):		Horseplains-riverwash complex		Drainage Class:	_____
Taxonomy (Subgroup):		_____		Field Observations	_____
				Confirm Mapped Type?	_____ Yes <input checked="" type="checkbox"/> No
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 12+	B	7.5 YR 4/1	7.5 YR 3/4	Common / Prominent	Sandy Clay
Hydric Soil Indicators:					
_____ Histosol		_____ Concretions		_____ High Organic Content in surface Layer in Sandy Soils	
_____ Histic Epipedon		_____ Organic Streaking in Sandy Soils		_____ Listed on Local Hydric Soils List	
_____ Sulfidic Odor		_____ Listed on National Hydric Soils List		_____ Other (Explain in Remarks)	
_____ Aquic Moisture Regime		_____		_____	
_____ Reducing Conditions		_____		_____	
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		_____		_____	
Hydric soil indicators present with low-chroma colors and mottles.					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Remarks:			
Sampling point considered within a wetland. Wetland area dominated by emergent vegetation type located along fringe of excavated wetland.			

Approved by HQUSACE 2/92

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

Project/Site: <u>Hoskins Landing</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Greg Howard</u>	Date: <u>08/02/06</u> County: <u>Sanders</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u> x </u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u> X </u> No Is the area a potential Problem Area?: <u> </u> Yes <u> X </u> No (If needed, explain on reverse.)	Community ID: <u>Emergent</u> Transect ID: <u>T1</u> Plot ID: <u>3</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 <u><i>Eleocharis palustris</i></u>	<u>H</u>	<u>OBL</u>	9		
2 <u><i>Phalaris arundinacea</i></u>	<u>H</u>	<u>FACW</u>	10		
3 <u><i>Scirpus acutus</i></u>	<u>H</u>	<u>OBL</u>	11		
4 <u><i>Potamogeton natans</i></u>	<u>H</u>	<u>OBL</u>	12		
5 <u><i>Carex retrorsa</i></u>	<u>H</u>	<u>FAC</u>	13		
6 <u><i>Sagittaria latifolia</i></u>	<u>H</u>	<u>OBL</u>	14		
7 _____			15		
8 _____			16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 6/6 = 100%

Area dominated by hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks): <u> </u> Stream, Lake, or Tide Gauge <u> </u> Aerial Photographs <u> </u> Other <u> x </u> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <u> x </u> Inundated <u> </u> Saturated in Upper 12 Inches <u> </u> Water Marks <u> </u> Drift Lines <u> </u> Sediment Deposits <u> </u> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <u> </u> Oxidized Root Channels in Upper 12 Inches <u> </u> Water-Stained Leaves <u> </u> Local Soil Survey Data <u> </u> FAC-Neutral Test <u> </u> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> - </u> (in.) Depth to Free Water in Pit: <u> - </u> (in.) Depth to Saturated Soil: <u> 0 </u> (in.)	
Remarks: Hydrology indicators present with inundation and saturated soils to ground surface.	

SOILS

Map Unit Name (Series and Phase):	Horseplains-riverwash complex	Drainage Class:	
Taxonomy (Subgroup):		Field Observations	
		Confirm Mapped Type?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 2	O	10 YR 3/2	-	-	Organics
2 – 10	A	10 YR 3/1	10 YR 2/6	Common, Distinct	Clay
10+	B	10 YR 4/1	10 YR 2/6	Many, Prominent	Clay

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

Hydric soil indicators present with mottles and low-chroma colors.

WETLAND DETERMINATION

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

Remarks:
Sampling point considered within an emergent wetland type.

SOILS

Map Unit Name (Series and Phase):		Horseplains-riverwash complex		Drainage Class: _____	
Taxonomy (Subgroup):		_____		Field Observations	
				Confirm Mapped Type? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 - 1	A	10 YR 3/1	-	-	Organics w/clay loam
1 - 12	B1	10 YR 5/1	10 YR 4/6	Medium, 15%	Clay
12+	B2	2.5 YR 4/1	10 YR 4/6	Small, 10%	Clay
Hydric Soil Indicators:					
_____ Histosol		_____ Concretions		_____ High Organic Content in surface Layer in Sandy Soils	
_____ Histic Epipedon		_____ Organic Streaking in Sandy Soils		_____ Listed on Local Hydric Soils List	
_____ Sulfidic Odor		_____ Listed on National Hydric Soils List		_____ Other (Explain in Remarks)	
_____ Aquic Moisture Regime		_____		_____	
_____ Reducing Conditions		_____		_____	
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		_____		_____	
Hydric soil indicators present with low-chroma colors & mottles.					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Hydric Soils Present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Remarks: Sampling point considered within a wetland area. Excavated wetland; aquatic bed and emergent vegetation types.					

Approved by HQUSACE 2/92

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

Project/Site: <u>Hoskins Landing</u>	Date: <u>08/02/06</u>
Applicant/Owner: <u>MDT</u>	County: <u>Sanders</u>
Investigator: <u>Greg Howard</u>	State: <u>MT</u>
Do Normal Circumstances exist on the site: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>-</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>T1</u>
Is the area a potential Problem Area?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>5</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 <u>Agropyron repens</u>	<u>H</u>	<u>FACU</u>	9		
2 <u>Festuca pratensis</u>	<u>H</u>	<u>FACU+</u>	10		
3 <u>Cirsium arvense</u>	<u>H</u>	<u>FACU+</u>	11		
4 <u>Agrostis alba</u>	<u>H</u>	<u>FAC+</u>	12		
5 <u>Plantago major</u>	<u>H</u>	<u>FACU</u>	13		
6 <u>Phalaris arundinacea</u>	<u>H</u>	<u>FACW</u>	14		
7 _____			15		
8 _____			16		

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

Area dominated upland vegetation.

HYDROLOGY

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

SOILS

Map Unit Name		Horseplains-riverwash complex		Drainage Class: _____	
(Series and Phase):		_____		Field Observations	
Taxonomy (Subgroup):		_____		Confirm Mapped Type? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 1	B1	10 YR 4/2	-	-	Roots w/silty clay
1 – 12+	B2	10 YR 4/2	-	-	Silty loam
Hydric Soil Indicators:					
_____ Histosol		_____ Concretions		_____ High Organic Content in surface Layer in Sandy Soils	
_____ Histic Epipedon		_____ Organic Streaking in Sandy Soils		_____ Listed on Local Hydric Soils List	
_____ Sulfidic Odor		_____ Listed on National Hydric Soils List		_____ Other (Explain in Remarks)	
_____ Aquic Moisture Regime		_____			
_____ Reducing Conditions					
_____ Gleyed or Low-Chroma Colors					
Soil profile has low-chroma colors, no other hydric soils indicators found.					

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks: Sampling point considered within an upland area.	

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 Bald Eagle
- Incidental habitat (list species) D S gray wolf, bull trout
- 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	---	---	.8 (M)	---	---	---	---

If documented, list the source (e.g., observations, records, etc.): Bald Eagle observed on the site during fall visit (11/04/05).

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

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

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

- Primary or Critical habitat (list species) D S _____
- Secondary habitat (list species) D S _____
- Incidental habitat (list species) D S American white pelican (D), boreal toad, peregrine falcon (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	---	---	---	---	.2 (L)	---	---

If documented, list the source (e.g., observations, records, etc.): American white pelican observed during fall 2006.

14C. GENERAL WILDLIFE HABITAT RATING

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

Substantial (based on any of the following)

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

Low (based on any of the following)

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

Moderate (based on any of the following)

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

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

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

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

Evidence of Wildlife Use from 14C(i)	Wildlife Habitat Features Rating from 14C(ii)			
	<input type="checkbox"/> Exceptional	<input checked="" type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	--	--
Moderate	--	.7 (M)	--	--
Low	--	--	--	--

Comments: _____

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

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

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

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

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

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

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

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

Types of Fish Known or Suspected within AA	Modified Habitat Quality from 14D(ii)			
	<input type="checkbox"/> Exceptional	<input checked="" type="checkbox"/> High	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low
Native game fish	--	--	--	--
Introduced game fish	--	.8 (H)	--	--
Non-game fish	--	--	--	--
No fish	--	--	--	--

Comments: _____

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

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

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

Estimated wetland area in AA subject to periodic flooding	<input type="checkbox"/> ≥ 10 acres			<input checked="" type="checkbox"/> <10, >2 acres			<input type="checkbox"/> ≤2 acres		
	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
% of flooded wetland classified as forested, scrub/shrub, or both									
AA contains no outlet or restricted outlet	--	--	--	--	--	--	--	--	--
AA contains unrestricted outlet	--	--	--	--	--	.4 (M)	--	--	--

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: Road crossing on west end of backwater channel has been removed, allowing for surface flow during highwater to move unrestricted along channel and drain back into excavated wetland and Flathead River.

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

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

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

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

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input checked="" type="checkbox"/> >5 acre feet			<input type="checkbox"/> <5, >1 acre feet			<input type="checkbox"/> ≤1 acre foot		
	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Duration of surface water at wetlands within the AA									
Wetlands in AA flood or pond ≥ 5 out of 10 years	--	.9 (H)	--	--	--	--	--	--	--
Wetlands in AA flood or pond < 5 out of 10 years	--	--	--	--	--	--	--	--	--

Comments: _____

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

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

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

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

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
	<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%		<input checked="" type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
% cover of wetland vegetation in AA	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Evidence of flooding or ponding in AA								
AA contains no or restricted outlet	--	--	--	--	--	--	--	--
AA contains unrestricted outlet	--	--	--	--	.4 (M)	--	--	--

Comments: _____

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

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

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

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses.	Duration of Surface Water Adjacent to Rooted Vegetation		
	<input type="checkbox"/> Permanent / Perennial	<input checked="" type="checkbox"/> Seasonal / Intermittent	<input type="checkbox"/> Temporary / Ephemeral
≥ 65 %	--	--	--
35-64 %	--	.6 (M)	--
< 35 %	--	--	--

Comments: Shoreline planted with wetland shrubs and development of emergent vegetation along banks.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

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

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

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

14K. UNIQUENESS

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

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant
Estimated Relative Abundance from 11									
Low disturbance at AA (12i)	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (12i)	--	--	--	--	.5M	--	--	--	--
High disturbance at AA (12i)	--	--	--	--	--	--	--	--	--

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL

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

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

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

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

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

Ownership	Disturbance at AA from 12(i)		
	<input type="checkbox"/> Low	<input checked="" type="checkbox"/> Moderate	<input type="checkbox"/> High
Public ownership	--	--	--
Private ownership	--	.3(L)	--

Comments: Area managed by the Confederated Salish & Kootenai Tribes.

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	moderate	0.80	1	
B. MT Natural Heritage Program Species Habitat	low	0.2	1	
C. General Wildlife Habitat	moderate	0.70	1	
D. General Fish/Aquatic Habitat	high	0.80	1	
E. Flood Attenuation	moderate	0.40	1	
F. Short and Long Term Surface Water Storage	high	0.90	1	
G. Sediment/Nutrient/Toxicant Removal	moderate	0.40	1	
H. Sediment/Shoreline Stabilization	moderate	0.60	1	
I. Production Export/Food Chain Support	high	1.00	1	
J. Groundwater Discharge/Recharge	high	1.00	1	
K. Uniqueness	moderate	0.50	1	
L. Recreation/Education Potential	low	0.30	1	
Total:		<u>7.60</u>	<u>12.00</u>	_____
Percent of Total Possible Points:			63% (Actual / Possible) x 100 [rd to nearest whole #]	

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

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

I
 II
 III
 IV

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

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

- Primary or Critical habitat (list species) D S _____
- Secondary habitat (list species) D S _____
- Incidental habitat (list species) D S _____
- No usable habitat D S none

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	---	---	---	---	---	---	0 (L)

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

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

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

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

- Primary or Critical habitat (list species) D S _____
- Secondary habitat (list species) D S _____
- Incidental habitat (list species) D S _____
- No usable habitat D S none

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	---	---	---	---	---	---	0 (L)

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

14C. GENERAL WILDLIFE HABITAT RATING

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

Substantial (based on any of the following)

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

Low (based on any of the following)

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

Moderate (based on any of the following)

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

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

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

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

Evidence of Wildlife Use from 14C(i)	Wildlife Habitat Features Rating from 14C(ii)			
	<input type="checkbox"/> Exceptional	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Moderate	<input type="checkbox"/> Low
Substantial	--	--	--	--
Moderate	--	--	--	--
Low	--	--	.2 (L)	--

Comments: _____

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

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

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

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

Y N Comments: Rarely floods, but does likely occur on occasion.

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

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

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

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

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding.	<input type="checkbox"/> >5 acre feet			<input type="checkbox"/> <5, >1 acre feet			<input checked="" type="checkbox"/> ≤1 acre foot		
	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Duration of surface water at wetlands within the AA									
Wetlands in AA flood or pond ≥ 5 out of 10 years	--	--	--	--	--	--	--	.3 (L)	--
Wetlands in AA flood or pond < 5 out of 10 years	--	--	--	--	--	--	--	--	--

Comments: _____

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

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

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

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

Sediment, Nutrient, and Toxicant Input Levels Within AA	AA receives or surrounding land use has potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
	<input type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%		<input checked="" type="checkbox"/> ≥ 70%		<input type="checkbox"/> < 70%	
% cover of wetland vegetation in AA	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Evidence of flooding or ponding in AA								
AA contains no or restricted outlet	--	--	--	--	.5 (M)	--	--	--
AA contains unrestricted outlet	--	--	--	--	--	--	--	--

Comments: _____

14H. SEDIMENT/ShORELINE STABILIZATION

NA (proceed to 14I)

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

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

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

Comments: No shoreline present.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

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

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

A	<input checked="" type="checkbox"/> Vegetated component >5 acres						<input type="checkbox"/> Vegetated component 1-5 acres						<input checked="" type="checkbox"/> Vegetated component <1 acre					
B	<input checked="" type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input type="checkbox"/> Low		<input type="checkbox"/> High		<input type="checkbox"/> Moderate		<input checked="" type="checkbox"/> Low	
C	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input type="checkbox"/> N	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
P/P	1H	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S/I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	.2L
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 Likely discharges groundwater through alluvium.

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: _____

14K. UNIQUENESS

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

Replacement Potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the MTNHP.			AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by the MTNHP.			AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate.		
	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input type="checkbox"/> common	<input type="checkbox"/> abundant	<input type="checkbox"/> rare	<input checked="" type="checkbox"/> common	<input type="checkbox"/> abundant
Estimated Relative Abundance from 11									
Low disturbance at AA (12i)	--	--	--	--	--	--	--	--	--
Moderate disturbance at AA (12i)	--	--	--	--	--	--	--	.3L	--
High disturbance at AA (12i)	--	--	--	--	--	--	--	--	--

Comments: _____

14L. RECREATION / EDUCATION POTENTIAL

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

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

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

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

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

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

Comments: Area managed by the Confederated Salish & Kootenai Tribes.

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	0.00	1	
B. MT Natural Heritage Program Species Habitat	low	0.00	1	
C. General Wildlife Habitat	low	0.20	1	
D. General Fish/Aquatic Habitat	N/A		--	
E. Flood Attenuation	low	0.20	1	
F. Short and Long Term Surface Water Storage	low	0.30	1	
G. Sediment/Nutrient/Toxicant Removal	moderate	0.50	1	
H. Sediment/Shoreline Stabilization	N/A		--	
I. Production Export/Food Chain Support	low	0.20	1	
J. Groundwater Discharge/Recharge	high	1.00	1	
K. Uniqueness	low	0.30	1	
L. Recreation/Education Potential	low	0.10	1	
Total:		<u>2.80</u>	<u>10.00</u>	
Percent of Total Possible Points:			<u>28%</u> (Actual / Possible) x 100 [rd to nearest whole #]	

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

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
Hoskins Landing
Dixon, Montana*

HOSKINS LANDING MITIGATION SITE 2006



Photo Point No. 1: View looking south along vegetation transect. Foreground consisting of upland slopes seeded with native grass species.



Photo Point No. 2: View looking south towards excavated wetland and emergent wetlands.



Photo Point No. 3: View looking east, excavated wetland, adjacent to undisturbed emergent wetlands. Emergent vegetation expanding into inundated portions of excavated wetland.



Photo Point No. 4: View looking north across the mitigation site. Western side of excavated wetland with aquatic bed and emergent wetland types, undisturbed wetland located in center.



Photo Point No. 5: View looking east, reconnected backwater channel along southern edge of site boundary.



Photo Point No. 7: View looking east near backwater channel. Area of native shrub plantings with browse protection guards over grown with seeded grass and upland species.

HOSKINS LANDING MITIGATION SITE 2006



Photo Point No. 8: View looking east along backwater channel from within the adjacent upland.



Photo Point No. 9: View looking west, towards excavated wetland. Upland community in foreground and excavated wetland in background.



Photo Point No. 9: View looking north across remnant pasture. Undisturbed areas consisting of mostly upland grasses. Portions of the site mowed for weed control efforts.



Photo Point No. 9: View looking south, upland shrub community type consisting of hawthorn, American plum and cottonwood. Located on higher terrace along backwater channel.



Photo Point No. 10: View looking west; inlet to backwater channel on eastern side of mitigation site. Increased vegetation cover observed during 2005 and 2006 monitoring.



Photo Point No. 11: View looking northwest along the Flathead river banks. Increase in vegetation cover, area dominated by reed canarygrass and redtop.

HOSKINS LANDING MITIGATION SITE 2006



Photo Point No. 12: View looking northwest along Flathead River. Area of excavation and grading work to remove historic berm along north boundary of site during 2002.



Photo Point No. 13: View looking west along backwater flood channel. Substrate of cobbles and gravels with increasing vegetation cover of black cottonwood saplings.



Photo Point No. 6: Panoramic view looking northwest; area of upland grass community in foreground and excavated wetland in background. Emergent wetland vegetation developing around excavated wetland fringe.

HOSKINS LANDING MITIGATION SITE 2006



Photo Point No. 6: Panoramic view looking northeast; area of upland grass community in foreground and excavated wetland in background.



Photo Point No. 4: Panoramic view looking north across the mitigation site. Western side of excavated wetland, aquatic bed and emergent wetland types, undisturbed wetland located in center. Outlet to remnant backwater channel located on left side of photo. Transect located along western side of excavated wetland. Emergent vegetation developing dense cover around excavated wetland fringe.

Appendix D

ORIGINAL SITE PLAN SOIL SURVEY MAP AND DESCRIPTION

*MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana*

MONTANA DEPARTMENT OF TRANSPORTATION

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	STPP 45(29)	1

FEDERAL AID PROJECT NO. STPP 45(29)

WETLAND

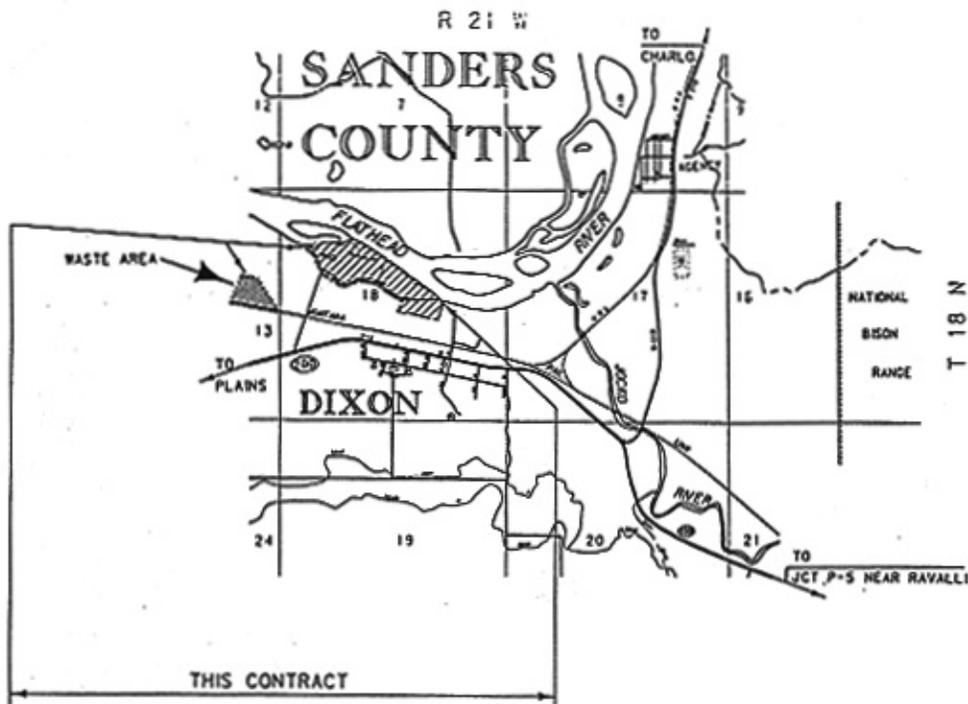
DIXON WETLAND MITIGATION

SANDERS COUNTY



THIS PROJECT

SCALES AS NOTED ON PLANS
REDUCED PRINTS 1/3 ORIGINAL SCALE



PRELIMINARY
FOR PLAN IN HAND ONLY

RELATED PROJECTS

--

ASSOCIATED PROJECT AGREEMENT NUMBERS

R/W & U/L	STPP NO.

MONTANA DEPARTMENT OF TRANSPORTATION	
APPROVED: _____	
DAVE A. SALT DIRECTOR OF TRANSPORTATION	
BY: _____	PRODUCTION NUMBER
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED: _____	DATE
ENGINEER/ARCHITECT	DATE

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CONSTRUCTION ACCESS

THE CONTRACTOR IS RESPONSIBLE FOR REVEGETATING ALL DISTURBED ACCESS AND STAGING AREAS.

WETLAND TOPSOIL

EXCAVATE WETLAND TOPSOIL FROM WITHIN CONSTRUCTION LIMIT AREAS AND STOCKPILE TOPSOIL IN THE AREAS DESIGNATED ON THE PLANS. PLACE TOPSOIL TO A MINIMUM DEPTH OF 100mm ON ALL DISTURBED AREAS.
FINISHED GRADE ELEVATIONS DO NOT INCLUDE TOPSOIL.

GRADING

PERFORM ALL EXCAVATION AND EMBANKMENTS BY METHODS DESCRIBED IN SECTION 203 OF THE STANDARD SPECIFICATIONS. ALL EXCAVATION INCLUDING MUCK EXCAVATION AND DISPOSAL OF EXCESS MATERIAL WILL BE PAID FOR AS "UNCLASSIFIED EXCAVATION". EXCAVATION OF SATURATED MATERIAL IS ANTICIPATED IN SOME AREAS, HOWEVER NO PAYMENT WILL BE MADE FOR MUCK EXCAVATION. DISPOSE OF EXCESS MATERIAL OFF SITE IN AREA SPECIFIED SOUTHWEST OF THE WETLAND SITE.
ROUND ALL SLOPES 10:1 AND STEEPER.

SEEDING

SEED AREAS SHOWN ON THE PLANS AND OTHER AREAS DISTURBED DURING CONSTRUCTION. SEE SPECIAL PROVISIONS FOR SEED MIX TO BE USED ON EACH AREA.

FENCING

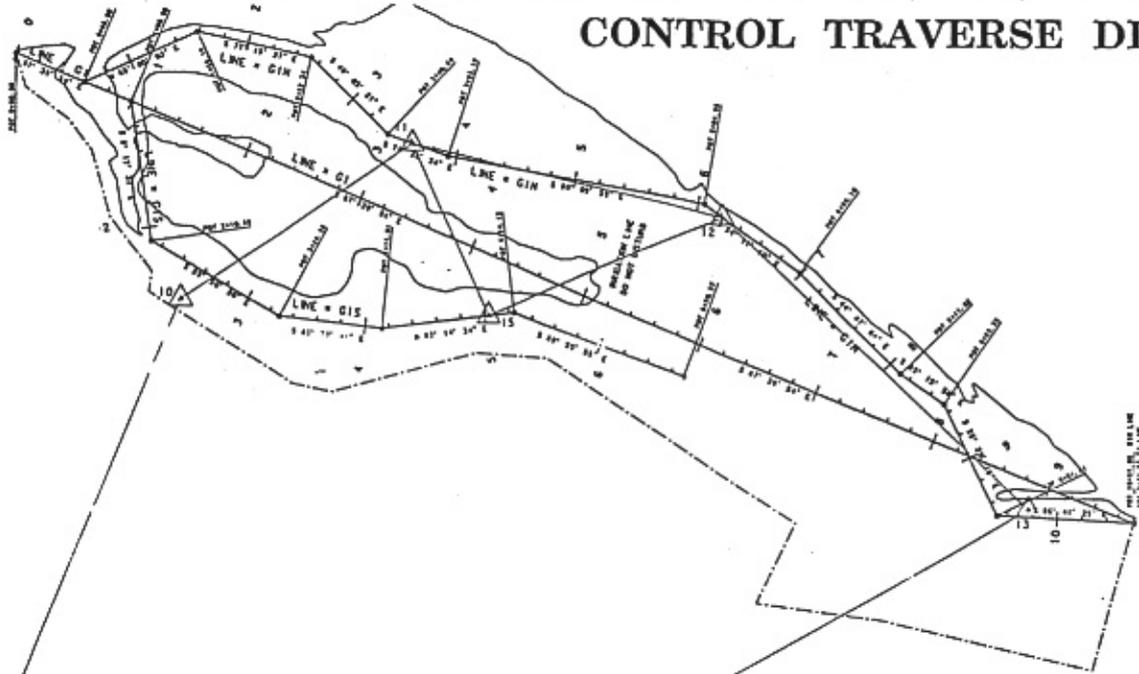
PERIMETER FENCING IS STANDARD 140T BARBED 5-WIRE FENCE WITH WOODEN POSTS (TYPE F5W1). PLACE PERIMETER FENCING 0.2 m OUTSIDE THE BOUNDARY DEFINED BY THE CERTIFICATE OF SURVEY (C.O.S. 2070). DO NOT FENCE THE NORTH BOUNDARY ADJACENT TO THE RIVER.

PRELIMINARY

LINEAR AND LEVEL DATA

CENTERLINE COORDINATE TABLE				
STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
0+00.00	POB	33,419.1288	66,607.6208	LINE = 61
0+75.97	POB	33,049.3882	67,507.5918	LINE = 61
1+00.00	POB	33,236.3372	67,747.1154	LINE = 61M
1+25.00	POB	33,422.8412	68,027.1154	LINE = 61M
1+50.00	POB	33,609.3452	68,347.1154	LINE = 61M
2+00.00	POB	33,795.8492	68,707.1154	LINE = 61M
2+25.00	POB	33,982.3532	69,107.1154	LINE = 61M
2+50.00	POB	34,168.8572	69,547.1154	LINE = 61M
3+00.00	POB	34,355.3612	70,027.1154	LINE = 61M
3+25.00	POB	34,541.8652	70,547.1154	LINE = 61M
3+50.00	POB	34,728.3692	71,107.1154	LINE = 61M
4+00.00	POB	34,914.8732	71,707.1154	LINE = 61M
4+25.00	POB	35,101.3772	72,347.1154	LINE = 61M
4+50.00	POB	35,287.8812	73,027.1154	LINE = 61M
5+00.00	POB	35,474.3852	73,747.1154	LINE = 61M
5+25.00	POB	35,660.8892	74,507.1154	LINE = 61M
5+50.00	POB	35,847.3932	75,307.1154	LINE = 61M
6+00.00	POB	36,033.8972	76,147.1154	LINE = 61M
6+25.00	POB	36,220.4012	77,027.1154	LINE = 61M
6+50.00	POB	36,406.9052	77,947.1154	LINE = 61M
7+00.00	POB	36,593.4092	78,907.1154	LINE = 61M
7+25.00	POB	36,779.9132	79,907.1154	LINE = 61M
7+50.00	POB	36,966.4172	80,947.1154	LINE = 61M
8+00.00	POB	37,152.9212	82,027.1154	LINE = 61M
8+25.00	POB	37,339.4252	83,147.1154	LINE = 61M
8+50.00	POB	37,525.9292	84,307.1154	LINE = 61M
9+00.00	POB	37,712.4332	85,507.1154	LINE = 61M
9+25.00	POB	37,898.9372	86,747.1154	LINE = 61M
9+50.00	POB	38,085.4412	88,027.1154	LINE = 61M
10+00.00	POB	38,271.9452	89,347.1154	LINE = 61M
10+25.00	POB	38,458.4492	90,707.1154	LINE = 61M
10+50.00	POB	38,644.9532	92,107.1154	LINE = 61M
11+00.00	POB	38,831.4572	93,547.1154	LINE = 61M
11+25.00	POB	39,017.9612	95,027.1154	LINE = 61M
11+50.00	POB	39,204.4652	96,547.1154	LINE = 61M
12+00.00	POB	39,390.9692	98,107.1154	LINE = 61M
12+25.00	POB	39,577.4732	99,707.1154	LINE = 61M
12+50.00	POB	39,763.9772	101,347.1154	LINE = 61M
13+00.00	POB	39,950.4812	103,027.1154	LINE = 61M
13+25.00	POB	40,136.9852	104,747.1154	LINE = 61M
13+50.00	POB	40,323.4892	106,507.1154	LINE = 61M
14+00.00	POB	40,509.9932	108,307.1154	LINE = 61M
14+25.00	POB	40,696.4972	110,147.1154	LINE = 61M
14+50.00	POB	40,882.0012	112,027.1154	LINE = 61M
15+00.00	POB	41,068.5052	113,947.1154	LINE = 61M
15+25.00	POB	41,254.0092	115,907.1154	LINE = 61M
15+50.00	POB	41,440.5132	117,907.1154	LINE = 61M
16+00.00	POB	41,627.0172	119,947.1154	LINE = 61M
16+25.00	POB	41,813.5212	122,027.1154	LINE = 61M
16+50.00	POB	42,000.0252	124,147.1154	LINE = 61M
17+00.00	POB	42,186.5292	126,307.1154	LINE = 61M
17+25.00	POB	42,373.0332	128,507.1154	LINE = 61M
17+50.00	POB	42,559.5372	130,747.1154	LINE = 61M
18+00.00	POB	42,746.0412	133,027.1154	LINE = 61M
18+25.00	POB	42,932.5452	135,347.1154	LINE = 61M
18+50.00	POB	43,119.0492	137,707.1154	LINE = 61M
19+00.00	POB	43,305.5532	140,107.1154	LINE = 61M
19+25.00	POB	43,492.0572	142,547.1154	LINE = 61M
19+50.00	POB	43,678.5612	145,027.1154	LINE = 61M
20+00.00	POB	43,865.0652	147,547.1154	LINE = 61M
20+25.00	POB	44,051.5692	150,107.1154	LINE = 61M
20+50.00	POB	44,238.0732	152,707.1154	LINE = 61M
21+00.00	POB	44,424.5772	155,347.1154	LINE = 61M
21+25.00	POB	44,611.0812	158,027.1154	LINE = 61M
21+50.00	POB	44,797.5852	160,747.1154	LINE = 61M
22+00.00	POB	44,984.0892	163,507.1154	LINE = 61M
22+25.00	POB	45,170.5932	166,307.1154	LINE = 61M
22+50.00	POB	45,357.0972	169,147.1154	LINE = 61M
23+00.00	POB	45,543.6012	172,027.1154	LINE = 61M
23+25.00	POB	45,730.1052	174,947.1154	LINE = 61M
23+50.00	POB	45,916.6092	177,907.1154	LINE = 61M
24+00.00	POB	46,103.1132	180,907.1154	LINE = 61M
24+25.00	POB	46,289.6172	183,947.1154	LINE = 61M
24+50.00	POB	46,476.1212	187,027.1154	LINE = 61M
25+00.00	POB	46,662.6252	190,147.1154	LINE = 61M
25+25.00	POB	46,849.1292	193,307.1154	LINE = 61M
25+50.00	POB	47,035.6332	196,507.1154	LINE = 61M
26+00.00	POB	47,222.1372	199,747.1154	LINE = 61M
26+25.00	POB	47,408.6412	203,027.1154	LINE = 61M
26+50.00	POB	47,595.1452	206,347.1154	LINE = 61M
27+00.00	POB	47,781.6492	209,707.1154	LINE = 61M
27+25.00	POB	47,968.1532	213,107.1154	LINE = 61M
27+50.00	POB	48,154.6572	216,547.1154	LINE = 61M
28+00.00	POB	48,341.1612	220,027.1154	LINE = 61M
28+25.00	POB	48,527.6652	223,547.1154	LINE = 61M
28+50.00	POB	48,714.1692	227,107.1154	LINE = 61M
29+00.00	POB	48,900.6732	230,707.1154	LINE = 61M
29+25.00	POB	49,087.1772	234,347.1154	LINE = 61M
29+50.00	POB	49,273.6812	238,027.1154	LINE = 61M
30+00.00	POB	49,460.1852	241,747.1154	LINE = 61M
30+25.00	POB	49,646.6892	245,507.1154	LINE = 61M
30+50.00	POB	49,833.1932	249,307.1154	LINE = 61M
31+00.00	POB	50,019.6972	253,147.1154	LINE = 61M
31+25.00	POB	50,206.2012	257,027.1154	LINE = 61M
31+50.00	POB	50,392.7052	260,947.1154	LINE = 61M
32+00.00	POB	50,579.2092	264,907.1154	LINE = 61M
32+25.00	POB	50,765.7132	268,907.1154	LINE = 61M
32+50.00	POB	50,952.2172	272,947.1154	LINE = 61M
33+00.00	POB	51,138.7212	277,027.1154	LINE = 61M
33+25.00	POB	51,325.2252	281,147.1154	LINE = 61M
33+50.00	POB	51,511.7292	285,307.1154	LINE = 61M
34+00.00	POB	51,698.2332	289,507.1154	LINE = 61M
34+25.00	POB	51,884.7372	293,747.1154	LINE = 61M
34+50.00	POB	52,071.2412	298,027.1154	LINE = 61M
35+00.00	POB	52,257.7452	302,347.1154	LINE = 61M
35+25.00	POB	52,444.2492	306,707.1154	LINE = 61M
35+50.00	POB	52,630.7532	311,107.1154	LINE = 61M
36+00.00	POB	52,817.2572	315,547.1154	LINE = 61M
36+25.00	POB	53,003.7612	320,027.1154	LINE = 61M
36+50.00	POB	53,190.2652	324,547.1154	LINE = 61M
37+00.00	POB	53,376.7692	329,107.1154	LINE = 61M
37+25.00	POB	53,563.2732	333,707.1154	LINE = 61M
37+50.00	POB	53,749.7772	338,347.1154	LINE = 61M
38+00.00	POB	53,936.2812	343,027.1154	LINE = 61M
38+25.00	POB	54,122.7852	347,747.1154	LINE = 61M
38+50.00	POB	54,309.2892	352,507.1154	LINE = 61M
39+00.00	POB	54,495.7932	357,307.1154	LINE = 61M
39+25.00	POB	54,682.2972	362,147.1154	LINE = 61M
39+50.00	POB	54,868.8012	367,027.1154	LINE = 61M
40+00.00	POB	55,055.3052	371,947.1154	LINE = 61M
40+25.00	POB	55,241.8092	376,907.1154	LINE = 61M
40+50.00	POB	55,428.3132	381,907.1154	LINE = 61M
41+00.00	POB	55,614.8172	386,947.1154	LINE = 61M
41+25.00	POB	55,801.3212	392,027.1154	LINE = 61M
41+50.00	POB	55,987.8252	397,147.1154	LINE = 61M
42+00.00	POB	56,174.3292	402,307.1154	LINE = 61M
42+25.00	POB	56,360.8332	407,507.1154	LINE = 61M
42+50.00	POB	56,547.3372	412,747.1154	LINE = 61M
43+00.00	POB	56,733.8412	418,027.1154	LINE = 61M
43+25.00	POB	56,920.3452	423,347.1154	LINE = 61M
43+50.00	POB	57,106.8492	428,707.1154	LINE = 61M
44+00.00	POB	57,293.3532	434,107.1154	LINE = 61M
44+25.00	POB	57,479.8572	439,547.1154	LINE = 61M
44+50.00	POB	57,666.3612	445,027.1154	LINE = 61M
45+00.00	POB	57,852.8652	450,547.1154	LINE = 61M
45+25.00	POB	58,039.3692	456,107.1154	LINE = 61M
45+50.00	POB	58,225.8732	461,707.1154	LINE = 61M
46+00.00	POB	58,412.3772	467,347.1154	LINE = 61M
46+25.00	POB	58,598.8812	473,027.1154	LINE = 61M
46+50.00	POB	58,785.3852	478,747.1154	LINE = 61M
47+00.00	POB	58,971.8892	484,507.1154	LINE = 61M
47+25.00	POB	59,158.3932	490,307.1154	LINE = 61M
47+50.00	POB	59,344.8972	496,147.1154	LINE = 61M
48+00.00	POB	59,531.4012	502,027.1154	LINE = 61M
48+25.00	POB	59,717.9052	507,947.1154	LINE = 61M
48+50.00	POB	59,904.4092	513,907.1154	LINE = 61M
49+00.00	POB	60,090.9132	519,907.1154	LINE = 61M
49+25.00	POB	60,277.4172	525,947.1154	LINE = 61M
49+50.00	POB	60,463.9212	532,027.1154	LINE = 61M
50+00.00	POB	60,650.4252	538,147.1154	LINE = 61M
50+25.00	POB	60,836.9292	544,307.1154	LINE = 61M
50+50.00	POB	61,023.4332	550,507.1154	LINE = 61M
51+00.00	POB	61,209.9372	556,747.1154	LINE = 61M
51+25.00	POB	61,396.4412	563,027.1154	LINE = 61M
51+50.00	POB	61,582.9452	569,347.1154	LINE = 61M
52+00.00	POB	61,769.4492	575,707.1154	LINE = 61M
52+25.00	POB	61,955.9532	582,107.1154	LINE = 61M
52+50.00	POB	62,142.4572	588,547.1154	LINE = 61M
53+00.00	POB	62,328.9612	595,027.1154	LINE = 61M
53+25.00	POB	62,515.4652	601,547.1154	LINE = 61M
53+50				

CONTROL TRAVERSE DIAGRAM



T. 18 N. R. 21 W.

SEC 18



CONTROL TRAVERSE ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
2	22 924.941	66 492.169	764.253	16 mm x 762 mm L.P. w/ALUM CAP - 50 mm 108B ON BLUFF 15.2 m + ABOVE ROAD. 1.9 m N.W. OF FX LNE. 21 m N.E. OF FX CON.
3	22 825.908	67 019.314	764.218	16 mm x 762 mm L.P. w/ALUM CAP - 50 mm 108C 2 m S.W. OF R/W FX. 10.6 m N.E. OF TEL. POLE. 11.6 m S.W. CENTERLINE B.N. RAILROAD
13	23 060.401	67 423.532	764.551	16 mm x 762 mm L.P. w/25mm YELLOW PLASTIC CAP
12	23 292.455	67 180.607	765.266	16 mm x 762 mm L.P. w/25mm YELLOW PLASTIC CAP
11	23 346.961	66 927.843	764.725	16 mm x 762 mm L.P. w/25mm YELLOW PLASTIC CAP
10	23 226.122	66 735.675	765.846	16 mm x 762 mm L.P. w/25mm YELLOW PLASTIC CAP
15	23 213.133	66 891.185	764.152	16 mm x 762 mm L.P. w/25mm YELLOW PLASTIC CAP
139	22 905.478	67 430.571	765.850	SET 600 NAIL BETWEEN GRAVEL ACCESS ROAD FENCE AROUND STORM WATER LAGOON 25m NORTH OF THE SE FENCE CORNER

MONTANA CADSW

PREPARED BY: [blank]
 CHECKED BY: [blank]
 DATE: [blank]

4843-01-01-04-01-01

N 69°10' 00" E

PRELIMINARY

SUMMARY

GRADING							
STATION		cubic meters					REMARKS
FROM	TO	EXCAVATION	EMB. +	TOPSOIL	EXCESS	WASTE AREA	
1+00.00	8+10.00	33 358	6 907	3 755	22 576		CI LMC
1+25.00	10+75.00	5 273	979	935	1 471		CI LMC
1+50.00	13+25.00	3 723	0	103	0		CI LMC
1+75.00	15+75.00						SPONGE SALVAGE WASTE AREA
2+00.00	18+25.00						WASTE AREA
TOTAL		44 631	6 886	7 543	24 192	24 091	

* FOR INFORMATION ONLY

IRRIGATION STRUCTURES			
STATION	COUNT		REMARKS
	REMOVE	INSTALL	
TOTAL	1	1	CIH LEFT

TOPSOIL & SEEDING							
STATION		FACTORS					REMARKS
FROM	TO	TOPSOIL SALVAGE & PLACING	SEED		FERTILIZER	CONDITION SEEDING	
			NO. 1		NO. 1		
1+00.00	8+10.00	2 753	2.54		3.64	3.64	CI LMC
1+25.00	10+00.00	922	0.91		0.91	0.91	CI LMC
1+50.00	3+25.00	500	0.31		0.31	0.31	CI LMC
2+00.00	2+25.00	1 215	0.29		0.29	0.29	WASTE AREA
TOTAL		7 543	7.9		7.9	7.9	

ADD 2, 3
↑
WASTE WASTE AREA

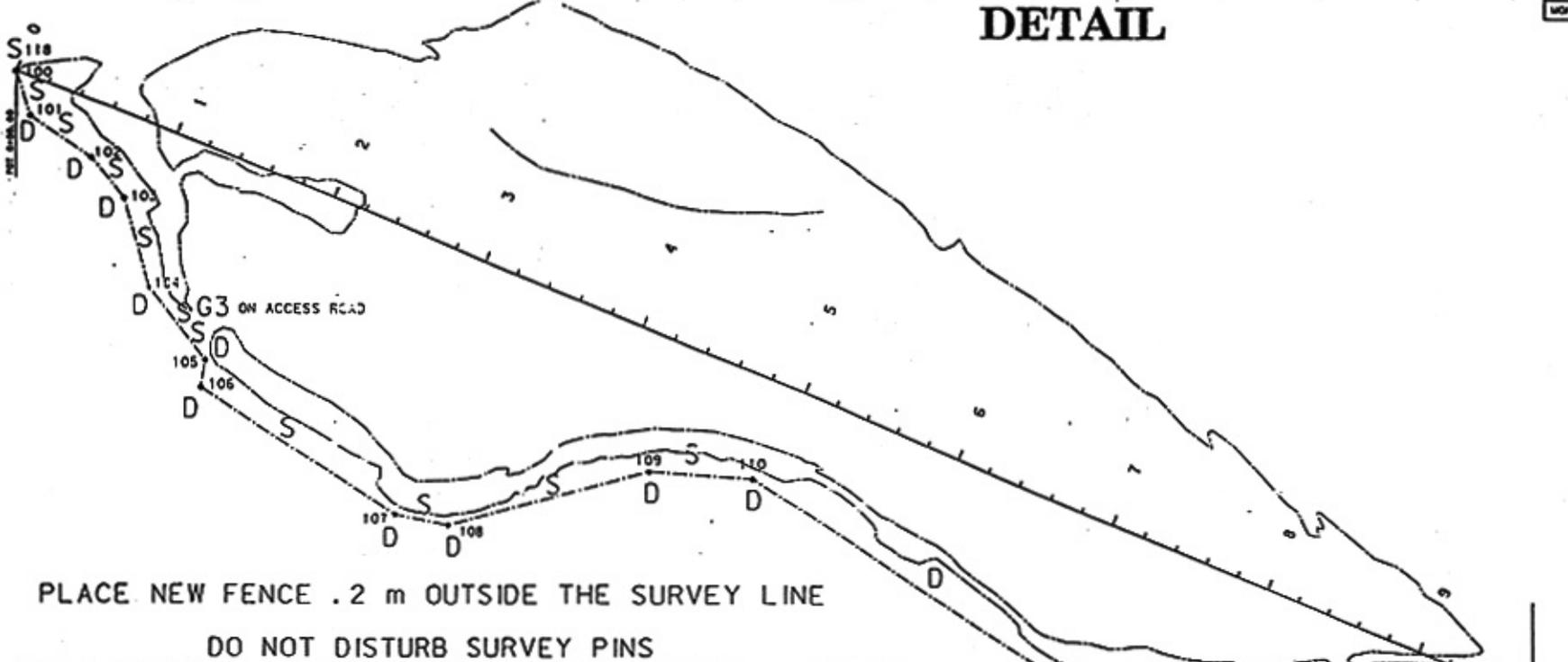
PLUG WATER WELL			
STATION	COUNT		REMARKS
	REMOVE	INSTALL	
1+14	0.5	0.5	To RIGHT OF LMC CI
2+23	0.5	0.5	To RIGHT OF LMC CI
TOTAL	1.0	1.0	

FENCING								
STATION		METERS		WOOD		METERS		REMARKS
FROM	TO	REMOVE FENCE	FARM FENCE	FARM FENCE PANEL		FARM GATE		
			TYPE F24	SINGLE	DOUBLE	TYPE G3		
0+00	3+73		1287.85	18	15	9.74		RIGHT OF CI LMC
1+28	1+73	1055.44						RIGHT OF CI LMC
TOTAL		1055.44	1287.85	18	15	9.74		

PRELIMINARY

MONTANA DEPARTMENT OF LAND & WATER
 DIVISION OF LAND & WATER
 1500 WEST WYOMING AVENUE
 BUTTE, MONTANA 59717
 PHONE (406) 241-3000
 FAX (406) 241-3001

DETAIL



PLACE NEW FENCE .2 m OUTSIDE THE SURVEY LINE
DO NOT DISTURB SURVEY PINS

POINT	NORTH	EAST	DESCRIPTION
118	23421.402407	66606.950500	PROPERTY CORNER ESTIMATED LOW WATER LINE NOTHING SET
100	23419.126000	66607.623000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 100 29235
101	23392.151000	66615.592000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 101 29235
102	23367.054000	66650.652000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 102 29235
103	23342.312000	66669.030000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 103 29235
104	23289.794000	66683.586000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 104 29235
105	23247.146000	66716.710000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 105 29235
106	23231.349000	66714.303000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 106 29235
107	23158.157000	66828.977000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 107 29235
108	23151.747000	66861.746000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 108 29235
109	23183.382000	66981.133000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 109 29235
110	23179.297000	67040.335000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 110 29235
111	23049.592000	67239.242000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 111 29235
112	22984.430000	67208.423000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 112 29235
113	22970.254000	67306.505000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 113 29235
114	22928.750000	67475.036000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 114 29235
115	23049.382000	67507.593000	SET 20mm Rebar W/ 50mm MOOH ALUM CAP STAMPED 115 29235
116	23053.606339	67508.733094	PROPERTY CORNER ESTIMATED LOW WATER LINE NOTHING SET

S = SINGLE PANEL
D = DOUBLE PANEL
G3 = GATE (G-3)

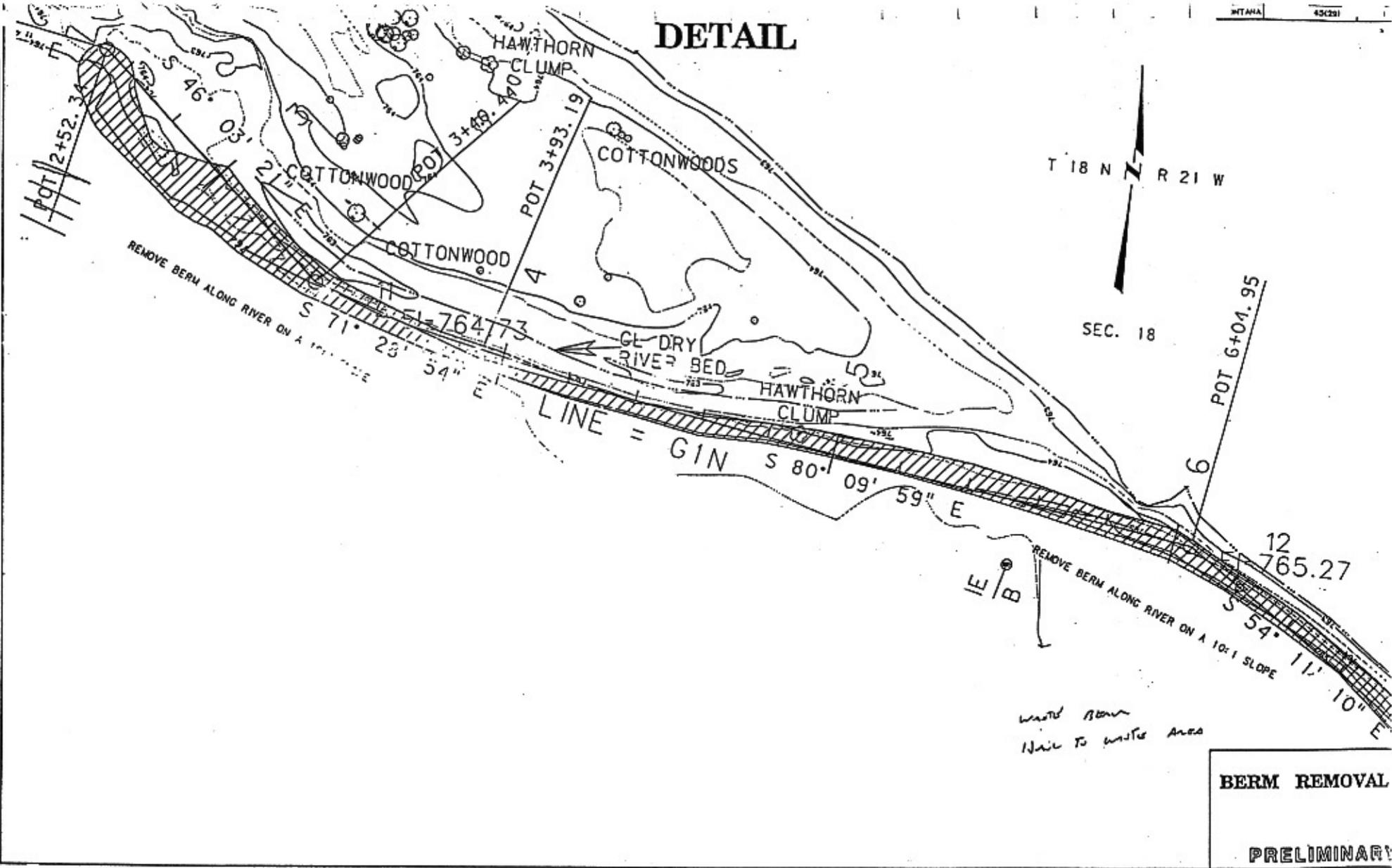
FENCING
PRELIMINARY

DETAIL

WATER BOUNDARY BY TRANSFER OF A
MOUNTAIN CLAD

4/14/2011 11:41:41 AM

DATE	BY
01/23/11	WJ



BERM REMOVAL

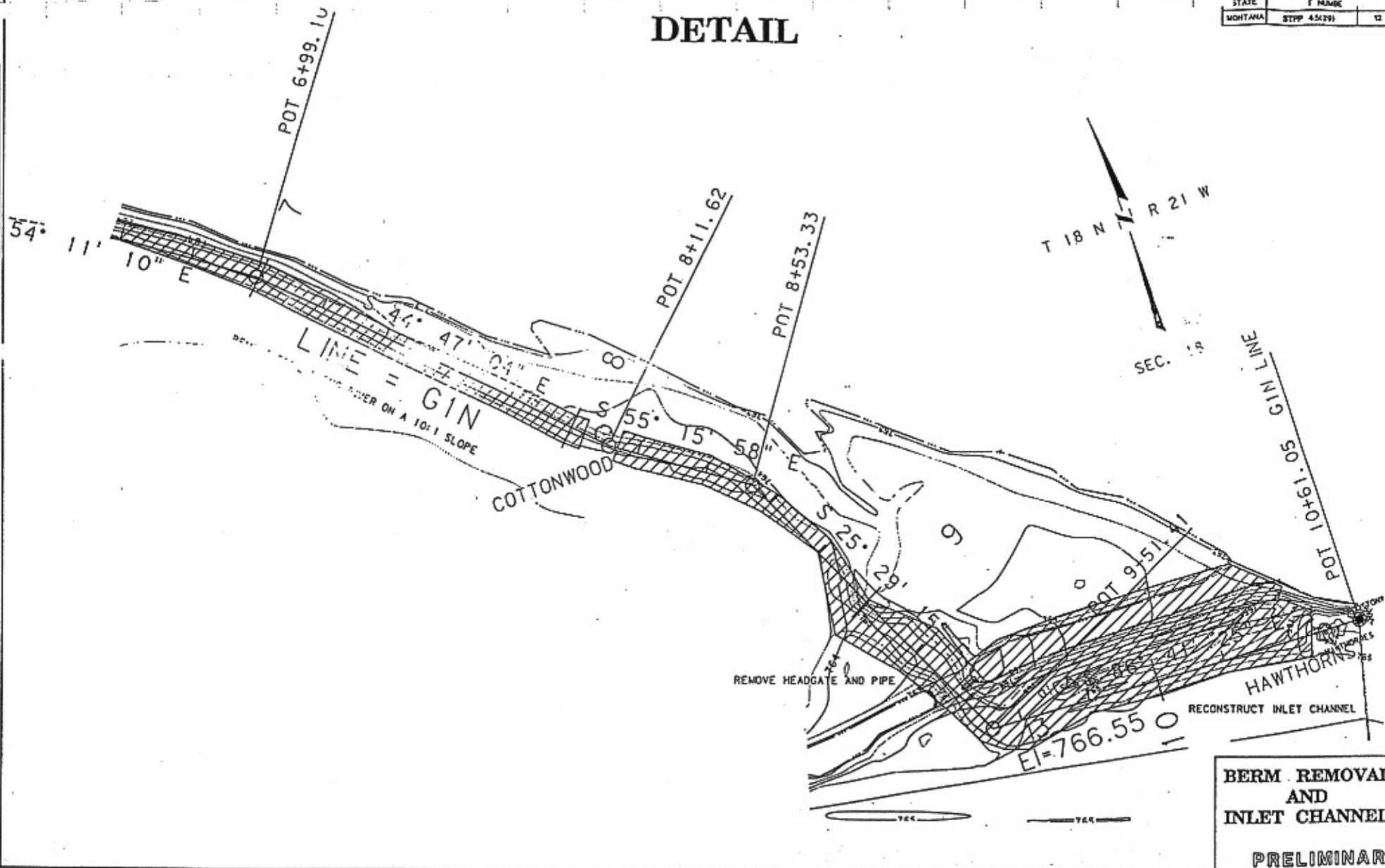
PRELIMINARY

DETAIL

STATE	F. NUMBER	12
MONTANA	STPP 45(29)	

MONTANA
 P.E.

DATE	BY	REVISION
01/24/01	WJ	1.0
02/24/01	WJ	1.1
03/24/01	WJ	1.2
04/24/01	WJ	1.3
05/24/01	WJ	1.4
06/24/01	WJ	1.5
07/24/01	WJ	1.6
08/24/01	WJ	1.7
09/24/01	WJ	1.8
10/24/01	WJ	1.9
11/24/01	WJ	2.0
12/24/01	WJ	2.1



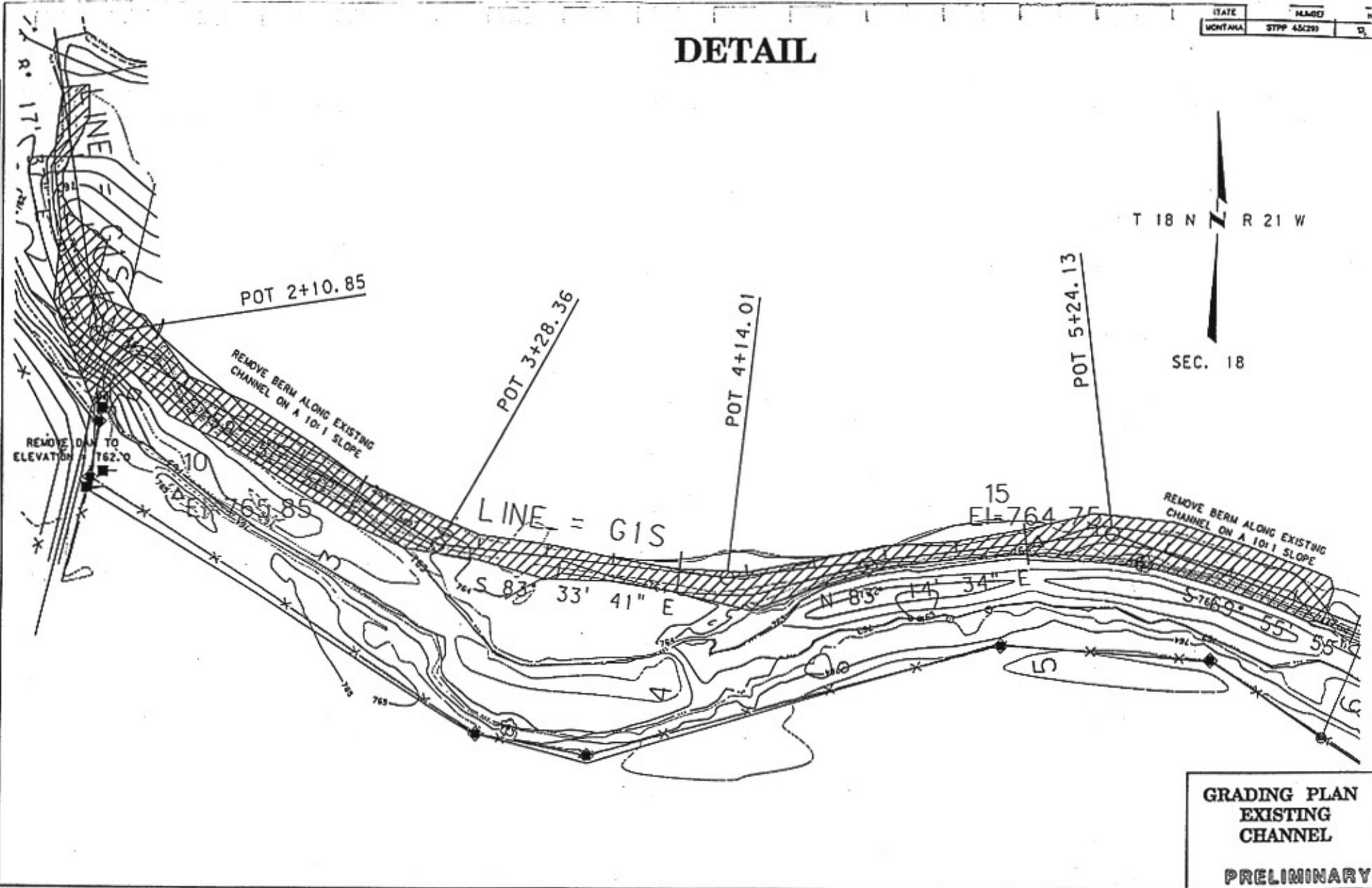
DETAIL

T 18 N
R 21 W
SEC. 18

MONTANA DEPARTMENT OF TRANSPORTATION
MONTANA CAD

CHV041448.dwg

DATE	BY
07/14/14	CHV

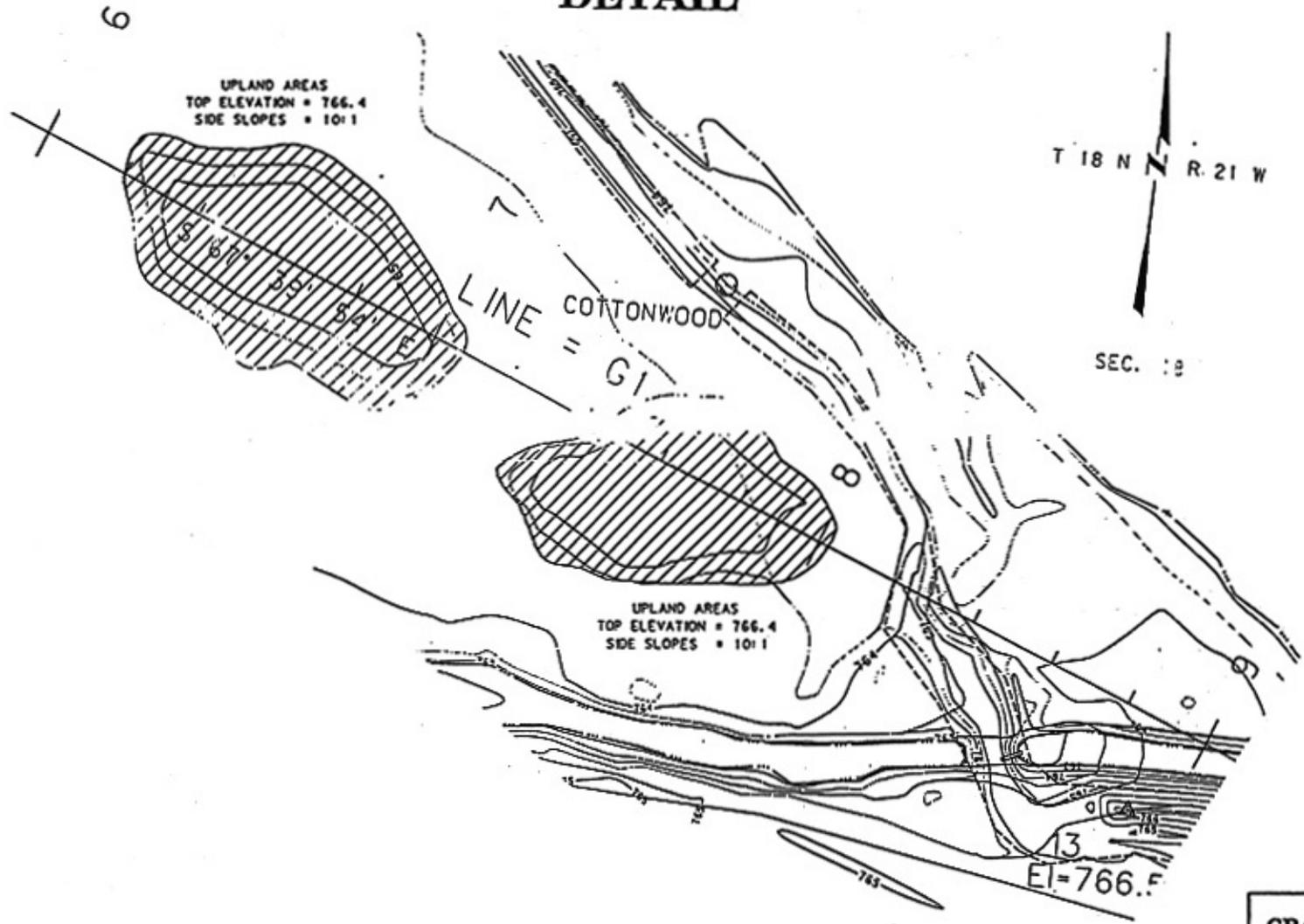


**GRADING PLAN
EXISTING
CHANNEL**

PRELIMINARY

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	STPP 45220	34

DETAIL



**GRADING PLAN
UPLAND AREAS**

PRELIMINARY



MONTANA STATE UNIVERSITY
 SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING
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Soils Map

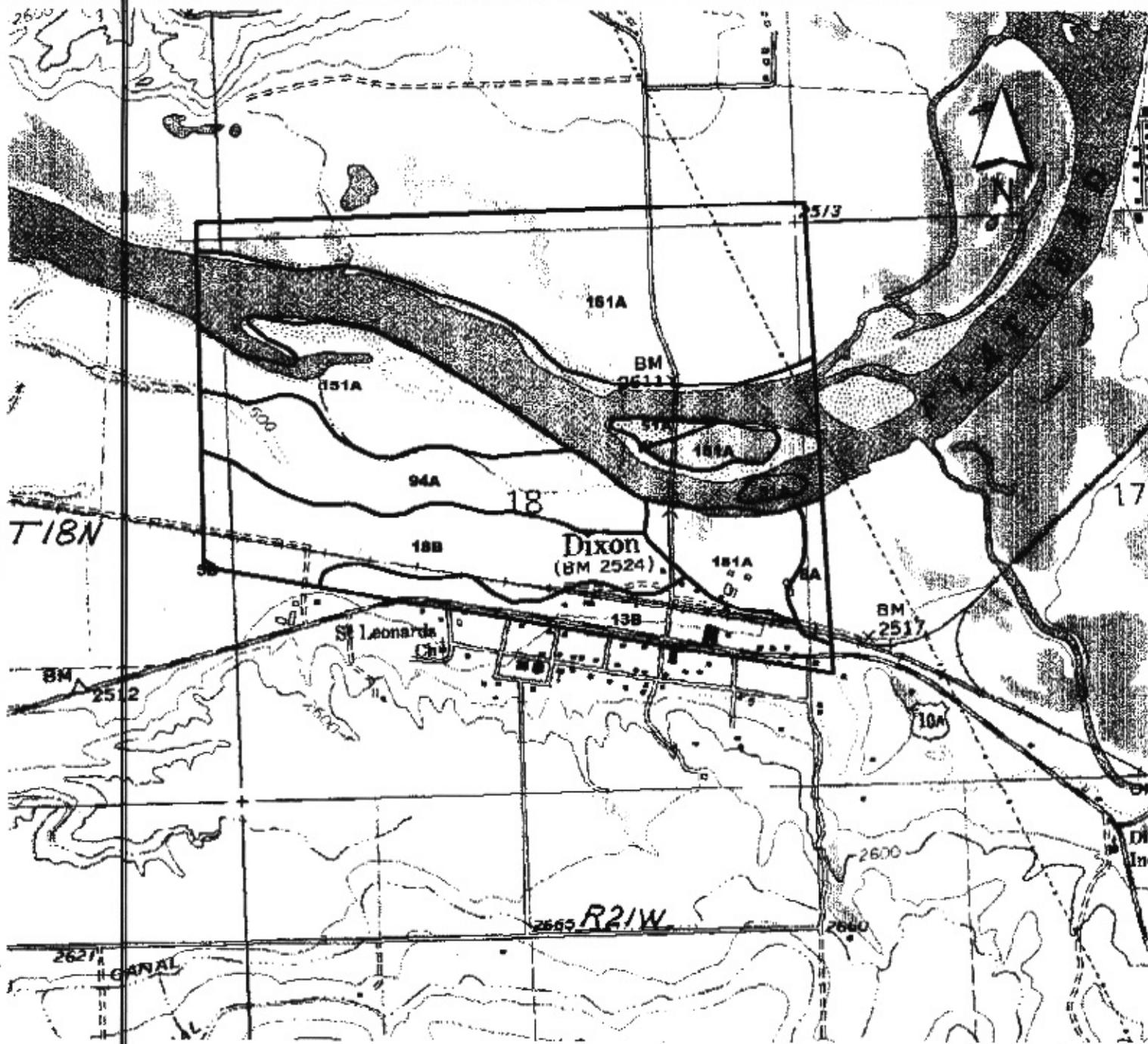
To: Greg Howard
From: Dan Feist

Land and Water Consulting

Plains Service Center
NRCS
Don J. Feist

ESCD

Date: 11/27/2002



Legend



Scale 1:15840 (4" = 1 mile)



Non-Technical Descriptions

Sanders And Parts Of Lincoln And Flathead Counties, Montana

Only those map units that have entries for the selected non-technical description categories are included in this report.

Map Unit: 8A - Hewolf gravelly loam, 0 to 2 percent slopes

Description Category: SOI

HEWOLF GRAVELLY LOAM IS MORE THAN 60 INCHES DEEP WITH A DARK COLORED SURFACE LAYER AND SLOPES OF 0-2 PERCENT. LANDFORM: STREAM TERRACES; FROST FREE DAYS: 90-110; AVAILABLE WATER CAPACITY IN INCHES: 2.1-3.4; MAJOR CONSIDERATIONS: FLOODING, WATER TABLE; LANDUSE MAY INCLUDE: RANGELAND.

Map Unit: 13B - Round butte silty clay loam, 2 to 8 percent slopes

Description Category: SOI

ROUND BUTTE SILTY CLAY LOAM IS MORE THAN 60 INCHES DEEP WITH A LIGHTER COLORED SURFACE LAYER AND SLOPES OF 2-8 PERCENT. LANDFORM: LAKE PLAINS OR TERRACES; FROST FREE DAYS: 105-125; AVAILABLE WATER CAPACITY IN INCHES: 4.8-6.7; MAJOR CONSIDERATIONS: SODICITY; LANDUSE MAY INCLUDE: RANGELAND.

Map Unit: 18B - Dryfork silt loam, 0 to 4 percent slopes

Description Category: SOI

DRYFORK SILT LOAM IS MORE THAN 60 INCHES DEEP WITH A LIGHTER COLORED SURFACE LAYER AND SLOPES OF 0-4 PERCENT. LANDFORM: LAKE PLAINS OR TERRACES; FROST FREE DAYS: 105-125; AVAILABLE WATER CAPACITY IN INCHES: 9.1-11.5; MAJOR CONSIDERATIONS: SODICITY; LANDUSE MAY INCLUDE: CROPLAND, RANGELAND.

Map Unit: 51A - Horseplains-riverwash complex, 0 to 2 percent slopes

Description Category: SOI

RIVERWASH (NO DATA)

Description Category: SOI

HORSEPLAINS FINE SANDY LOAM IS MORE THAN 60 INCHES DEEP WITH A LIGHTER COLORED SURFACE LAYER AND SLOPES OF 0-2 PERCENT. LANDFORM: FLOOD PLAINS; FROST FREE DAYS: 105-120; AVAILABLE WATER CAPACITY IN INCHES: 4.0-5.7; MAJOR CONSIDERATIONS: FLOODING; LANDUSE MAY INCLUDE: CROPLAND, WOODLAND.

Map Unit: 94A - Revals silt loam, 0 to 2 percent slopes

Description Category: SOI

REVALS SILT LOAM IS MORE THAN 60 INCHES DEEP WITH A LIGHTER COLORED SURFACE LAYER AND SLOPES OF 0-2 PERCENT. LANDFORM: FLOOD PLAINS; FROST FREE DAYS: 105-125; AVAILABLE WATER CAPACITY IN INCHES: 9.1-11.5; MAJOR CONSIDERATIONS: FLOODING; LANDUSE MAY INCLUDE: CROPLAND, WOODLAND.

Non-Technical Descriptions - Continued

Sanders And Parts Of Lincoln And Flathead Counties, Montana

Map Unit: 151A - Revais silt loam, gravelly substratum, 0 to 2 percent slopes

Description Category: SOI

REVAIS SILT LOAM IS MORE THAN 60 INCHES DEEP WITH A LIGHTER COLORED SURFACE LAYER AND SLOPES OF 0-2 PERCENT. LANDFORM: FLOOD PLAINS; FROST FREE DAYS: 95-115; AVAILABLE WATER CAPACITY IN INCHES: 6.7-9.8; MAJOR CONSIDERATIONS: FLOODING; LANDUSE MAY INCLUDE: CROPLAND, WOODLAND.

Appendix E

BIRD SURVEY PROTOCOL GPS PROTOCOL

*MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana*

BIRD SURVEY PROTOCOL

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

Species Use within the Mitigation Wetland: Survey Method

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

Sites that can be circumambulated or walked throughout.

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

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

Sites that cannot be circumambulated.

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

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

Species Use within the Mitigation Wetland: Data Recording

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

1. Bird Species List

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

2. Bird Density

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

3. Bird Behavior

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

4. Bird Species Habitat Use

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

GPS Mapping and Aerial Photo Referencing Procedure

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

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

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

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

Appendix F

2006 MACROINVERTEBRATE SAMPLING PROTOCOL AND DATA

*MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana*

AQUATIC INVERTEBRATE SAMPLING PROTOCOL

Equipment List

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

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

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

Site Selection

Select the sampling site with these considerations in mind:

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

Sampling

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

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

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

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

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

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

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

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

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

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

Photograph the sampled site.

Sample Handling/Shipping

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

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

Prepared for PBS&J, Inc.

Prepared by W.Bollman, Rhithron Associates, Inc.

INTRODUCTION

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

METHODS

Sample processing

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

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

Assessment

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

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

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

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

Bioassessment metrics

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

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

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

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

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

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

Quality control

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

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

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

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

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

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

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

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

RESULTS

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

Quality Assurance

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

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

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

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

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

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

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

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

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

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

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

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

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Taxa Listing

Project ID: MDT06PBSJ
RAI No.: MDT06PBSJ026

RAI No.: MDT06PBSJ026

Sta. Name: Hoskins Landing 1

Client ID:

Date Coll.: 8/2/2006

No. Jars: 1

STORET ID:

Taxonomic Name	Count	PRA	Unique	Stage	Qualifier	BI	Function
Non-Insect							
Acari	4	4.04%	Yes	Unknown		5	PR
Cladocera	5	5.05%	Yes	Unknown		8	CF
Ostracoda	4	4.04%	Yes	Unknown		8	CG
Turbellaria	3	3.03%	Yes	Unknown		4	PR
Lymnaeidae							
<i>Pseudosuccinea</i> sp.	1	1.01%	Yes	Unknown		6	SC
Naididae							
Naididae	25	25.25%	Yes	Unknown		8	CG
Physidae							
Physidae	5	5.05%	Yes	Unknown		8	SC
Talitridae							
<i>Hyalella</i> sp.	5	5.05%	Yes	Unknown		8	CG
Tubificidae							
Tubificidae	3	3.03%	Yes	Unknown		10	CG
Odonata							
Coenagrionidae							
<i>Enallagma</i> sp.	6	6.06%	Yes	Larva		7	PR
Libellulidae							
Libellulidae	5	5.05%	Yes	Larva	Early Instar	9	PR
Ephemeroptera							
Baetidae							
<i>Callibaetis</i> sp.	2	2.02%	Yes	Larva		9	CG
Caenidae							
<i>Caenis</i> sp.	8	8.08%	Yes	Larva		7	CG
Trichoptera							
Leptoceridae							
Leptoceridae	1	1.01%	Yes	Larva	Early Instar	4	CG
Diptera							
Ceratopogonidae							
Ceratopogoninae	1	1.01%	Yes	Larva		6	PR
Tipulidae							
<i>Tipula</i> sp.	3	3.03%	Yes	Larva		4	SH
Chironomidae							
Chironomidae							
<i>Ablabesmyia</i> sp.	1	1.01%	Yes	Larva		8	CG
<i>Cricotopus (Isocladius)</i> sp.	1	1.01%	Yes	Larva		7	SH
<i>Dicrotendipes</i> sp.	1	1.01%	Yes	Larva		8	CG
<i>Paratanytarsus</i> sp.	2	2.02%	Yes	Larva		6	CG
<i>Pseudochironomus</i> sp.	12	12.12%	Yes	Larva		5	CG
<i>Tanytarsus</i> sp.	1	1.01%	Yes	Larva		6	CF
	Sample Count	99					

Metrics Report

Project ID: MDT06PBSJ
 RAI No.: MDT06PBSJ026
 Sta. Name: Hoskins Landing 1
 Client ID:
 STORET ID:
 Coll. Date: 8/2/2006

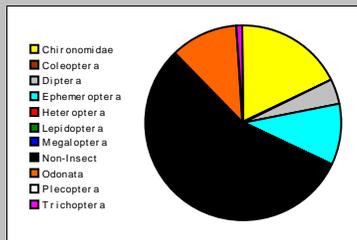
Abundance Measures

Sample Count: 99
 Sample Abundance: 990.00 10.00% of sample used

Coll. Procedure:
 Sample Notes:

Taxonomic Composition

Category	R	A	PRA
Non-Insect	9	55	55.56%
Odonata	2	11	11.11%
Ephemeroptera	2	10	10.10%
Plecoptera			
Heteroptera			
Megaloptera			
Trichoptera	1	1	1.01%
Lepidoptera			
Coleoptera			
Diptera	2	4	4.04%
Chironomidae	6	18	18.18%

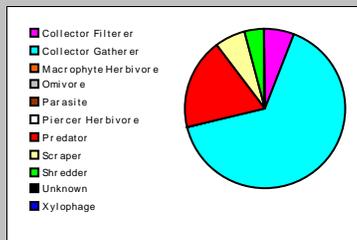


Dominant Taxa

Category	A	PRA
Naididae	25	25.25%
Pseudochironomus	12	12.12%
Caenis	8	8.08%
Enallagma	6	6.06%
Physidae	5	5.05%
Libellulidae	5	5.05%
Hyalella	5	5.05%
Cladocera	5	5.05%
Ostracoda	4	4.04%
Acari	4	4.04%
Turbellaria	3	3.03%
Tubificidae	3	3.03%
Tipula	3	3.03%
Paratanytarsus	2	2.02%
Callibaetis	2	2.02%

Functional Composition

Category	R	A	PRA
Predator	5	19	19.19%
Parasite			
Collector Gatherer	11	64	64.65%
Collector Filterer	2	6	6.06%
Macrophyte Herbivore			
Piercer Herbivore			
Xylophage			
Scraper	2	6	6.06%
Shredder	2	4	4.04%
Omnivore			
Unknown			

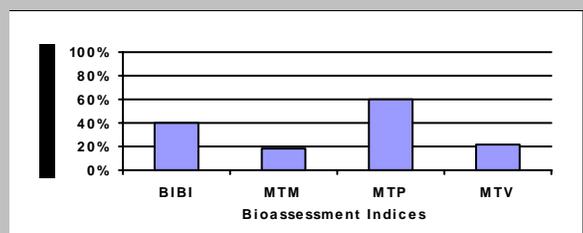


Metric Values and Scores

Metric	Value	BIBI	MTP	MTV	MTM
<i>Composition</i>					
Taxa Richness	22	3	2		1
Non-Insect Percent	55.56%				
E Richness	2	1		1	
P Richness	0	1		0	
T Richness	1	1		0	
EPT Richness	3		1		0
EPT Percent	11.11%		1		0
Oligochaeta+Hirudinea Percent	28.28%				
Baetidae/Ephemeroptera	0.200				
Hydropsychidae/Trichoptera	0.000				
<i>Dominance</i>					
Dominant Taxon Percent	25.25%		3		2
Dominant Taxa (2) Percent	37.37%				
Dominant Taxa (3) Percent	45.45%	5			
Dominant Taxa (10) Percent	79.80%				
<i>Diversity</i>					
Shannon H (loge)	2.639				
Shannon H (log2)	3.808		3		
Margalef D	4.570				
Simpson D	0.097				
Evenness	0.066				
<i>Function</i>					
Predator Richness	5		2		
Predator Percent	19.19%	3			
Filterer Richness	2				
Filterer Percent	6.06%			2	
Collector Percent	70.71%		2		1
Scraper+Shredder Percent	10.10%		1		0
Scraper/Filterer	1.000				
Scraper/Scraper+Filterer	0.500				
<i>Habit</i>					
Burrower Richness	4				
Burrower Percent	17.17%				
Swimmer Richness	1				
Swimmer Percent	2.02%				
Clinger Richness	2	1			
Clinger Percent	2.02%				
<i>Characteristics</i>					
Cold Stenotherm Richness	0				
Cold Stenotherm Percent	0.00%				
Hemoglobin Bearer Richness	4				
Hemoglobin Bearer Percent	17.17%				
Air Breather Richness	1				
Air Breather Percent	3.03%				
<i>Voltinism</i>					
Univoltine Richness	9				
Semivoltine Richness	1	1			
Multivoltine Percent	36.36%		3		
<i>Tolerance</i>					
Sediment Tolerant Richness	2				
Sediment Tolerant Percent	6.06%				
Sediment Sensitive Richness	0				
Sediment Sensitive Percent	0.00%				
Metals Tolerance Index	4.000				
Pollution Sensitive Richness	0				0
Pollution Tolerant Percent	25.25%	3			1
Hilsenhoff Biotic Index	7.111		0		0
Intolerant Percent	0.00%				
Supertolerant Percent	56.57%				
CTQa	97.714				

Bioassessment Indices

BioIndex	Description	Score	Pct	Rating
BIBI	B-IBI (Karr et al.)	20	40.00%	
MTP	Montana DEQ Plains (Bukantis 1998)	18	60.00%	Slight
MTV	Montana Revised Valleys/Foothills (Bollman 1998)	4	22.22%	Moderate
MTM	Montana DEQ Mountains (Bukantis 1998)	4	19.05%	Severe



Taxa Listing

Project ID: MDT06PBSJ
RAI No.: MDT06PBSJ027

RAI No.: MDT06PBSJ027

Sta. Name: Hoskins Landing 2

Client ID:

Date Coll.: 8/2/2006

No. Jars: 1

STORET ID:

Taxonomic Name	Count	PRA	Unique	Stage	Qualifier	BI	Function
Non-Insect							
Acari	1	0.90%	Yes	Unknown		5	PR
Cladocera	3	2.70%	Yes	Unknown		8	CF
Copepoda	1	0.90%	Yes	Unknown		8	CG
Cambaridae							
<i>Orconectes</i> sp.	2	1.80%	Yes	Unknown		6	OM
Lymnaeidae							
Lymnaeidae	1	0.90%	No	Immature		6	SC
<i>Stagnicola</i> sp.	1	0.90%	Yes	Unknown		6	SC
Naididae							
Naididae	47	42.34%	Yes	Unknown		8	CG
Physidae							
Physidae	14	12.61%	Yes	Unknown		8	SC
Planorbidae							
<i>Gyraulus</i> sp.	1	0.90%	Yes	Unknown		8	SC
<i>Helisoma</i> sp.	1	0.90%	Yes	Unknown		6	SC
Talitridae							
<i>Hyalella</i> sp.	2	1.80%	Yes	Unknown		8	CG
Tubificidae							
Tubificidae	1	0.90%	Yes	Unknown		10	CG
Odonata							
Coenagrionidae							
<i>Enallagma</i> sp.	4	3.60%	Yes	Larva		7	PR
Libellulidae							
Libellulidae	1	0.90%	Yes	Larva	Early Instar	9	PR
Ephemeroptera							
Baetidae							
<i>Callibaetis</i> sp.	5	4.50%	Yes	Larva		9	CG
Caenidae							
<i>Caenis</i> sp.	5	4.50%	Yes	Larva		7	CG
Heteroptera							
Belostomatidae							
<i>Belostoma</i> sp.	1	0.90%	Yes	Larva		7	PR
Notonectidae							
<i>Notonecta</i> sp.	2	1.80%	Yes	Adult		5	PR
Notonectidae	1	0.90%	No	Larva		10	PR
Pleidae							
Pleidae	1	0.90%	Yes	Larva		11	PR
Coleoptera							
Dytiscidae							
<i>Rhantus</i> sp.	1	0.90%	Yes	Adult		5	PR
Haliplidae							
<i>Halipus</i> sp.	1	0.90%	Yes	Adult		5	PH
<i>Peltodytes</i> sp.	1	0.90%	Yes	Adult		5	SH

Taxa Listing

Project ID: MDT06PBSJ
RAI No.: MDT06PBSJ027

RAI No.: MDT06PBSJ027

Sta. Name: Hoskins Landing 2

Client ID:

Date Coll.: 8/2/2006

No. Jars: 1

STORET ID:

Taxonomic Name	Count	PRA	Unique	Stage	Qualifier	BI	Function
Chironomidae							
Chironomidae							
<i>Acricotopus</i> sp.	1	0.90%	Yes	Larva		10	CG
Chironomidae	1	0.90%	No	Pupa		10	CG
<i>Corynoneura</i> sp.	1	0.90%	Yes	Larva		7	CG
<i>Cricotopus (Cricotopus)</i> sp.	2	1.80%	Yes	Larva		7	SH
<i>Pseudochironomus</i> sp.	5	4.50%	Yes	Larva		5	CG
Tanytarsini	3	2.70%	No	Larva	Early Instar	6	CF
	Sample Count	111					

Metrics Report

Project ID: MDT06PBSJ
 RAI No.: MDT06PBSJ027
 Sta. Name: Hoskins Landing 2
 Client ID:
 STORET ID:
 Coll. Date: 8/2/2006

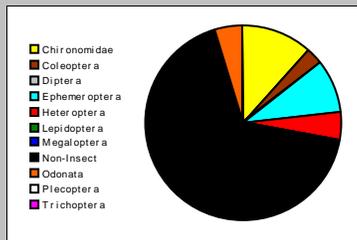
Abundance Measures

Sample Count: 111
 Sample Abundance: 1,110.00 10.00% of sample used

Coll. Procedure:
 Sample Notes:

Taxonomic Composition

Category	R	A	PRA
Non-Insect	11	75	67.57%
Odonata	2	5	4.50%
Ephemeroptera	2	10	9.01%
Plecoptera			
Heteroptera	3	5	4.50%
Megaloptera			
Trichoptera			
Lepidoptera			
Coleoptera	3	3	2.70%
Diptera			
Chironomidae	4	13	11.71%

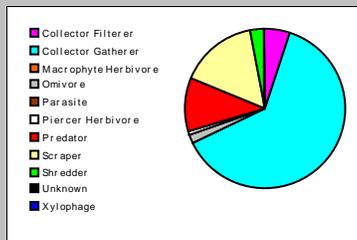


Dominant Taxa

Category	A	PRA
Naididae	47	42.34%
Physidae	14	12.61%
Pseudochironomus	5	4.50%
Callibaetis	5	4.50%
Caenis	5	4.50%
Enallagma	4	3.60%
Tanytarsini	3	2.70%
Cladocera	3	2.70%
Orconectes	2	1.80%
Notonecta	2	1.80%
Hyalella	2	1.80%
Cricotopus (Cricotopus)	2	1.80%
Tubificidae	1	0.90%
Libellulidae	1	0.90%
Acari	1	0.90%

Functional Composition

Category	R	A	PRA
Predator	7	12	10.81%
Parasite			
Collector Gatherer	9	69	62.16%
Collector Filterer	1	6	5.41%
Macrophyte Herbivore			
Piercer Herbivore	1	1	0.90%
Xylophage			
Scraper	4	18	16.22%
Shredder	2	3	2.70%
Omnivore	1	2	1.80%
Unknown			

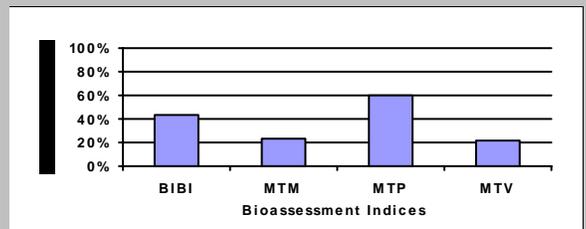


Metric Values and Scores

Metric	Value	BIBI	MTP	MTV	MTM
<i>Composition</i>					
Taxa Richness	25	3	3		2
Non-Insect Percent	67.57%				
E Richness	2	1		1	
P Richness	0	1		0	
T Richness	0	1		0	
EPT Richness	2		0		0
EPT Percent	9.01%		0		0
Oligochaeta+Hirudinea Percent	43.24%				
Baetidae/Ephemeroptera	0.500				
Hydropsychidae/Trichoptera	0.000				
<i>Dominance</i>					
Dominant Taxon Percent	42.34%		2		1
Dominant Taxa (2) Percent	54.95%				
Dominant Taxa (3) Percent	59.46%	3			
Dominant Taxa (10) Percent	81.08%				
<i>Diversity</i>					
Shannon H (loge)	2.212				
Shannon H (log2)	3.191		3		
Margalef D	5.157				
Simpson D	0.223				
Evenness	0.074				
<i>Function</i>					
Predator Richness	7		3		
Predator Percent	10.81%	3			
Filterer Richness	1				
Filterer Percent	5.41%			2	
Collector Percent	67.57%		2		2
Scraper+Shredder Percent	18.92%		2		0
Scraper/Filterer	3.000				
Scraper/Scraper+Filterer	0.750				
<i>Habit</i>					
Burrower Richness	1				
Burrower Percent	4.50%				
Swimmer Richness	5				
Swimmer Percent	9.01%				
Clinger Richness	1	1			
Clinger Percent	1.80%				
<i>Characteristics</i>					
Cold Stenotherm Richness	0				
Cold Stenotherm Percent	0.00%				
Hemoglobin Bearer Richness	5				
Hemoglobin Bearer Percent	9.91%				
Air Breather Richness	1				
Air Breather Percent	0.90%				
<i>Voltinism</i>					
Univoltine Richness	11				
Semivoltine Richness	6	5			
Multivoltine Percent	20.72%		3		
<i>Tolerance</i>					
Sediment Tolerant Richness	3				
Sediment Tolerant Percent	3.60%				
Sediment Sensitive Richness	0				
Sediment Sensitive Percent	0.00%				
Metals Tolerance Index	4.056				
Pollution Sensitive Richness	0				
Pollution Tolerant Percent	27.93%		1		0
Hilsenhoff Biotic Index	7.564		0		0
Intolerant Percent	0.00%				
Supertolerant Percent	70.27%				
CTQa	94.500				

Bioassessment Indices

BioIndex	Description	Score	Pct	Rating
BIBI	B-IBI (Karr et al.)	22	44.00%	
MTP	Montana DEQ Plains (Bukantis 1998)	18	60.00%	Slight
MTV	Montana Revised Valleys/Foothills (Bollman 1998)	4	22.22%	Moderate
MTM	Montana DEQ Mountains (Bukantis 1998)	5	23.81%	Moderate



Appendix G

REVEGETATION, SURVIVAL DATA AND CKST VEGETATION MANAGEMENT PLAN

*MDT Wetland Mitigation Monitoring
Hoskins Landing
Dixon, Montana*

RIPARIAN VEGETATION ENHANCEMENT - SURVIVAL DATA FOR SPRING 2004

Hoskins Landing 2004 Planting Ledger

	Container size / Type	Species	Spring 2004 Quantity Planted	Spring Survival	Fall 2004 Quantity Planted
Inlet Channel	Sm Shrub	American Plum	100	93	
Side Channel	Sm Shrub	American plum	100	90	
Upland Islands	Sm Shrub	American plum	100	96	
	Sm Shrub	Chokecherry	100	100	
	Sm Shrub	Hawthorn	100	99	
	Sm Shrub	Serviceberry	100	98	
	Sm Shrub	Rose	100	100	
Wetland	Plug	Hardstem bulrush			1600
	Plug	Nebraska sedge			1440
	Plug	Beaked sedge			1120
	Plug	Bebb's sedge			1120
	Plug	Small-fruited bulrush			800
	Lg Tree	Cottonwood	50	50	
	Lg Shrub	Dogwood	150	150	
	Sm Tree	Aspen	200	183	
	Sm Tree	Cottonwood	100	92	
	Sm Shrub	Dogwood	401	397	
	Sm Shrub	Bebb's Willow	239	218	
	Sm Shrub	Alder	150	142	
	Sm Shrub	Waterbirch	150	144	
	Cutting	Sandbar willow	1000	inundated	
Replacement	Sm	Waterbirch	53	53	
	Sm	Alder	49	49	
	Sm	Aspen	16	16	
	Sm	Cottonwood	42	42	
	Cutting	Bebb's Willow	445	Inundated	
	Cutting	Sandbar Willow	500	Inundated	
Total			4245	2212	6080

RIPARIAN VEGETATION ENHANCEMENT - SURVIVAL DATA FOR SPRING 2003
 (Confederated Salish and Kootenai Tribes, November 2003)

Wetland Planting Areas

Created Pond

Spring 2003 Containers					
Type / Species	# Planted	# Alive	# Poor	# Dead	Survival Rate
TREES					
Cottonwood	125	41	22	62	50%
Water Birch	175	20	76	79	55%
Aspen	75	9	19	47	37%
Total Trees	375	70	117	188	50%
SHRUBS					
Alder	42	7	5	30	29%
Sandbar willow	100	34	47	19	81%
R O Dogwood	400	111	68	221	45%
Total Shrubs	542	152	120	270	50%

Spring 2003 Cuttings					
Type / Species	# Planted	# Alive	# Poor	# Dead	Survival Rate
TREES					
Cottonwood	13	4	8	1	92%
Total Trees	13	4	8	1	92%
SHRUBS					
Sandbar willow	119	109	8	2	98%
Total Shrubs	119	109	8	2	98%

Side Channel

Spring 2003 Containers					
Type / Species	# Planted	# Alive	# Poor	# Dead	Survival Rate
TREES					
Cottonwood	100	60	27	13	87%
Water Birch	75	15	56	4	95%
Aspen	50	29	7	14	72%
Pine	103	18	26	59	43%
Total Trees	328	122	116	90	73%
SHRUBS					
Alder	50	15	25	10	80%
Sandbar willow	125	60	17	48	62%
R O Dogwood	200	81	82	37	82%
Rose	50	24	15	11	78%
Service berry	25	16	4	5	80%
Total Shrubs	450	196	143	111	75%

**RIPARIAN VEGETATION ENHANCEMENT - SURVIVAL DATA FOR SPRING 2003
(CONTINUED)**

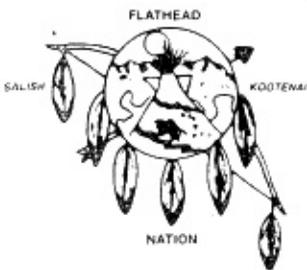
Upland Planting Areas

Upland Islands

Spring 2003 Containers					
Type / Species	# Planted	# Alive	# Poor	# Dead	Survival Rate
TREES					
Cottonwood	25	18	2	5	80%
Pine	100	23	29	48	52%
Total Trees	125	41	31	53	58%
SHRUBS					
Juniper	20	6	7	7	65%
Rose	200	136	39	23	88%
Snowberry	100	55	21	24	76%
Service berry	25	5	10	10	60%
Total Shrubs	345	202	77	64	81%

Access Road

Spring 2003 Containers					
Type / Species	# Planted	# Alive	# Poor	# Dead	Survival Rate
TREES					
Pine	100	50	2	48	52%
Total Trees	100	50	2	48	52%
SHRUBS					
Plum	72	0	2	70	3%
Juniper	20	0	0	20	0%
Chokecherry	20	2	6	12	40%
Rose	100	5	15	80	20%
Snowberry	65	8	2	55	15%
Serviceberry	50	3	4	43	14%
Total Shrubs	327	18	29	280	14%



THE CONFEDERATED SALISH AND KOOTENAI TRIBES
OF THE FLATHEAD NATION

P.O. BOX 278
Pablo, Montana 59855
(406) 275-2700
FAX (406) 275-2806

www.cskt.org

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ENVIRONMENTAL

September 27, 2006

Joseph E. Dupuis - Executive Secretary
Vern L. Clairmont - Executive Treasurer
Leon Bourdon - Sergeant-at-arms



TRIBAL COUNCIL MEMBERS:

James Steele, Jr. - Chairman
Carole Lankford - Vice Chair
Lloyd D. Irvine - Secretary
Ron Trahan - Treasurer
Joe Durglo
Mike Kenmille
Steve Lozar
Jim Malatara
Reuben A. Mathias
Sonny Morigeau

Bonnie Steg
Environmental Services
Montana Department of Transportation
P.O. Box 201001
Helena, MT 59620-1001

Re: Hoskin's Landing Wetland Mitigation Site
STPX 0045 (037) Control Number 4144
MDT Monitoring Reports - Weed Control

Dear Bonnie,

As requested in your letter of August 15, 2006 I am sending the Tribes' vegetation management plan for the Hoskin's Landing Wetland Mitigation Site for reference and inclusion in the 2006 Monitoring Report for Hoskin's Landing. If you have any questions please call me at (406) 675-2700, ext. 7242.

Sincerely,

Mary B. Price
Project Manager / Wetland Ecologist
Confederated Salish and Kootenai Tribes

cc: Dan Lipscomb, CSKT Shoreline Protection Office
Dale Becker, CSKT Wildlife Management Program

**Confederated Salish and Kootenai Tribes
Wildlife Management Program
Vegetation Management Plan – Hoskin’s Landing
Highway 200 Wetland Mitigation**

1. Property Description

Site: LFR5 / “Hoskin’s Landing”
Location: Sanders county / T18N, R21W, Sec 18
Size: 48.23 ac
Funding: Hwy 200 mitigation
Manager: Mary Price; (406) 883-2888 ex 7242

2. Mitigation Actions-to-Date:

Date	Action
2002	MDT completed construction per <u>Project Specific Agreement Between MDT and CSKT For Wetlands Mitigation For Highway 200 Dixon West Project (January 2002)</u> .
2002 - 2005	SKC Native Plant Nursery completed revegetation per (1) <u>Project Specific Agreement Between MDT and CSKT For Wetlands Mitigation For Highway 200 Dixon West Project (January 2002)</u> and (2) <u>MOA Between CSKT and SKC for Plant Installation for Hoskin’s Landing Wetland Mitigation Project (March 2004)</u> .
2004	MDT conducted remedial construction activities to remove berm at wetland outlet.
2005	April: White top treatment May: Thistle treatment June: Thistle treatment July: Thistle treatment July: Installed electric fence at river bank to exclude livestock. Sept.: Yellow Iris treatment
2006	April: Removed electric fence at river bank prior to spring snow-melt. August: Re-installed electric fence at river bank to exclude livestock. Sept: Mowed to reduce plant residue; hand pulled houndstongue.

3. Current Vegetation Management Goals:

Reduce invasive plant species and promote early to mid-serial native (and non-invasive non-native) plant community. This will be accomplished by: 1) reducing current non-native forb and grass (“weed”) component and 2) seeding appropriate forb and grass species as needed.

4. Targeted Invasive Plant Species:

The following is an inventory of invasive plant species that were identified for treatment as of September 2006:

Species	Common Name	MT Noxious Weed List	Infested Area (ac)	Cover Class ¹	Management Objective ²	Proposed Treatment ³
<i>Forbs:</i>						
ARCMIN	common burdock		trace	L	E	M
CENMAC	spotted knapweed	category 1	10	M	S	(M +) H
CHEALB	lambquarters		<0.1	L	S	H
CHRLEU	oxeye daisy	category 1	<0.1	L	E	H
CIRARV	Canada thistle	category 1	15	M	S	(M +) H
CIRVUL	bull thistle		10	L	E	M + H
CONARV	bindweed	category 1	<0.1	L	S	H
CYNOFF	houndstounge	category 1	trace	L	E	M (+) H
DIPFUL	teasle		<0.1	L	S	M
HYPPER	St. Johnswort	category 1	trace	L	E	M + H
ISIPSE	yellow iris	category 3	trace	L	E	M
LACSER	prickly lettuce		15	H	S	M + H
LINGEN	dalmation toadflax	category 1	trace	L	E	H
LINVUL	yellow toadflax	category 1	trace	L	E	H
MELALB	white sweetclover		<1	M	S	M + H
SISALT	tumble mustard		15	H	S	M + H
<i>Grasses:</i>						
BROTEC	cheatgrass		5	M	S	H

¹ Cover class: High (H) >26%; Moderate (M) 6-25%; Low (L) 0-5%

² Mgmt Objective: Eradicate (E) - totally eliminate; Suppress (S) - prevent seed production / reduce coverage; Contain (C) - prevent spread beyond current; Tolerate (T) - accept continual presence / probable spread

³ Treatment: Biocontrol (B); Mechanical/Manual (M); Herbicide (H)

5. Revegetation Species:

Areas treated for invasive plant species will require seeding when sufficient desirable vegetation is not present. The following is a list of plant species recommended for use at the site:

Species	Common Name	Native/Intro	Notes
<i>Forbs:</i>			
Achillia millefolium	yarrow	N	use native species only
Aster occidentalis	western mountain aster	N	
Balsamorhiza sagittata	arrowleaf balsamroot	N	
Cleome serrulata	Rocky Mountain beeplant	N	
Gaillardia aristata	blanketflower	N	
Geranium viscosissimum	sticky geranium	N	

Helianthus annuus	common sunflower	N	
Linum lewisii	Lewis flax	N	
Lupinus argenteus, leucophyllus, and/or sericeus	silvery lupine, velvet lupine, silky lupine	N	
Phacelia hastate or heterophylla	whiteleaf or virgate phacelia	N	
Sisyrinchium inflatum	blue-eyed grass	N	
Solidago canadensis or missouriensis	Canada or Missouri goldenrod	N	
Grasses:			
Bromus carinatus/marginatus	California/mountain brome	N	competitive - use very low rate
Elymus canadensis	Canada wildrye	N	
Elymus cinereus	basin wildrye	N	
Elymus elymoides	squireltail	N	
Elymus glaucus	blue wildrye	N	
Elymus lanceolatus	thickspike/streambank wheatgrass	N	competitive - use very low rate
Elymus trachycaulus	slender wheatgrass	N	
Hierochloe oderata	sweetgrass	N	
Koeleria macrantha	prairie Junegrass	N	
Pascopyrum smithii	western wheatgrass	N	
Poa secunda	Sandberg bluegrass	N	
Pseudoroegneria spicata	bluebunch wheatgrass	N	
Stipa comada	needle-and-thread	N	

*Usage dependant upon commercial availability.

Species Selection Notes:

- Seeding: Final seed mix shall have approximately 120 seed / sq ft for broadcast application (60 seeds / sq ft for drill-seeder application)
- Species selection: Recommended forbs and grasses can be readily established from seed. All recommended species are representative of an early to mid seral / competitive community.

6. Vegetation Management Plan – 2006 to 2010 (see Appendix 1 for herbicide codes):

Year 1 / 2006

Activity	Timing	Cost Estimate
mow (to reduce plant residues prior to herbicide application)	Late Summer / Fall	
herbicide application (broadcast/spot) – CENMAC, CIRARV, CIRVUL w/ A; BROTEC, LINGEN w/I	Fall: Oct +/-	

Year 2 / 2007

Activity	Timing	Cost Estimate
herbicide application #1 (broadcast/spot) – CENMAC, CHRLEU, CIRARV, CIRVUL, HYPPER, annuals w/ A (rosette to bud); CONARV, LINVUL w/ G?	Spring: May +/-	

mow #1 – CHRLEU, CIRARV, CIRVUL, annuals (for late buds); DIPFUL (late bolt to early bud)	June/July	
hand pull – ARCMIN, CYNOFF, ISIPSE, LINGEN	June	
mow #2 – CENMAC, CHRLEU, CIRARV, CIRVUL, annuals (for late buds); DIPFUL (late bolt to early bud)	July/Aug	
herbicide application #2 (spot) – CIRARV, CENMAC, others as needed w/ A; BROTEC, LINGEN w/ I	Fall: Oct +/-	
dormant seeding w/ grass/forb mix (in bare areas as needed)	Fall: Oct/Nov	

Year 3 / 2008

Activity	Timing	Cost Estimate
herbicide application #1 (broadcast/spot) – CENMAC, CHRLEU, CIRARV, CIRVUL, HYPFER w/ A (rosette to bud); CONARV, LINVUL w/ G?	Spring: May +/-	
mow/burn? #1 – CHRLEU, CIRARV, CIRVUL, annuals (for late buds); DIPFUL (late bolt to early bud)	June/July	
hand pull – ARCMIN, CYNOFF, ISIPSE, LINGEN	June	
mow #2 – CENMAC, CHRLEU, CIRARV, CIRVUL, annuals (for late buds); DIPFUL (late bolt to early bud)	July/Aug	
herbicide application #2 (spot) – CIRARV, CENMAC, others as needed w/ A; BROTEC, LINGEN w/ I	Fall: Oct +/-	

Year 4 / 2009

Activity	Timing	Cost Estimate
mow, hand pull, and spot spray	as needed	

Year 5 / 2010

Activity	Timing	Cost Estimate
mow, hand pull, and spot spray	as needed	

Appendix 1. Herbicides approved for use on the Flathead Indian Reservation¹.

Active Ingredient	Code	Example Registered Trade Names ²	Target Species
2,4-D amine	2a	various	broadleaf
2,4-D ester	2e	various	broadleaf
Aminopyralid	A	Milestone	broadleaf
Clopyralid	Cp	Transline, Reclaim	annual/perennial broadleaf
Chlorsulfuron	Cs	Telar	annual/perennial broadleaf
Dicamba	D	Banvel	annual/perennial broadleaf, woody
Fluazifop-p-Butyl	F	Fusion, Toronado	annual/perennial grasses
Glyphosate	G	Roundup, Accord	non-selective
Glyphosate (aquatic label)	Ga	Rodeo	non-selective
Imazapic	I	Plateau	annual/perennial broadleaf and grasses
Metsulfuron	M	Escort	annual/perennial broadleaf, woody
MCPA amine	Ma	various	broadleaf
Picloram	P	Tordon 22K	perennial broadleaf, vines, woody
Triclopyr	T	Remedy, Garlon	broadleaf, woody
<i>Mixes:</i>			
	Cp+2	Curtail	broadleaf
	M+Cs	Cimmeron Max	broadleaf
	I+G	Journey	non-selective
	T+Cp	Redeem	annual/perennial broadleaf

¹ All herbicide use shall comply with the CSKT Integrated Weed Management Plan and Proposed Noxious Weed Treatments – Environmental Assessments (2005 and 2006); and shall be approved by the Restoration Ecologist.

² The naming of specific products under this column does not constitute an endorsement of these products by CSKT; rather, these products serve as examples of herbicides that include the chemicals approved for use on the Flathead Indian Reservation.