MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2011

Selkirk Wetland Mitigation Reserve
Two Dot, Wheatland County, Montana

Prepared for:

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

Prepared by:

CONFLUENCE
PO Box 1133
Bozeman, MT 59771-1133

December 2011

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MDT Project Number NH-STPP-STPX 54(31)
Control Number 6161

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Confluence Consulting, Inc.
P.O. Box 1133
Bozeman, MT 59771

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1. INTRODUCTION

The Selkirk Wetland Mitigation Reserve 2011 Monitoring Report summarizes methods and results from the fifth year of monitoring at the Selkirk Reserve. The wetland mitigation site is located in Wheatland County, Montana, near the community of Two Dot. The site occurs at approximately 4,640 feet above mean sea level in the northeast quarter of Section 9 of Township 8 North, Range 12 East (Figure 1).

The Selkirk mitigation site was constructed by a private party on private land during the winter of 2006 to 2007. The site consisted of upland communities and approximately 25 acres of impaired wetland community prior to initiation of mitigation construction. The mitigation reserve encompasses an herbaceous wet meadow wetland, scrub/shrub wetland, open water, and upland buffer. Figures 2 and 3 (Appendix A) show the mapped site features and monitoring activity locations, respectively. Figure 4 (Appendix A) illustrates the 2011 crediting and assessment areas. Appendix B contains the MDT Mitigation Site Monitoring Form, the US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (Environmental Laboratory 1987), and the Montana Department of Transportation (MDT) Montana Wetland Assessment Forms. Appendix C contains relevant photographs. The project plan sheet is provided in Appendix D.

The original purpose of the mitigation site was to provide the Montana Department of Transportation (MDT) with 50 acres of wetland mitigation credit prior to US Highway 12 road construction in Watershed 10, the Musselshell Basin. The desired net total was approximately 60.4 acres of wetland credit after the application of various credit ratios to different design features and accounting for 0.4 acre for wetland fill associated with project construction.

Four different mitigation areas were developed with individual performance standards and credit ratios. Credit ratios were established for the following mitigation types: rehabilitation, 1.5:1; re-establishment/creation, 1:1; enhancement; 3:1; and, upland buffer, 5:1. The USACE will determine the final credits based on these ratios and the successful achievement of performance standards.

The original performance standards were amended on March 29, 2010, as referenced in a USACE letter from Todd Tillenger dated August 6, 2010 (USACE 2010a). The amendment addressed the current method of awarding credits from a pass/fail system to a credit-reduction based methodology. The functional lift standard requires an assurance of a functional lift with the most favorable credit ratios awarded if wetland assessment areas achieve a Category II status or better (USACE 2010a). The functional lift evaluation will be based on the 1999 MDT Montana Wetland Assessment Method (MWAM) (Berglund 1999).

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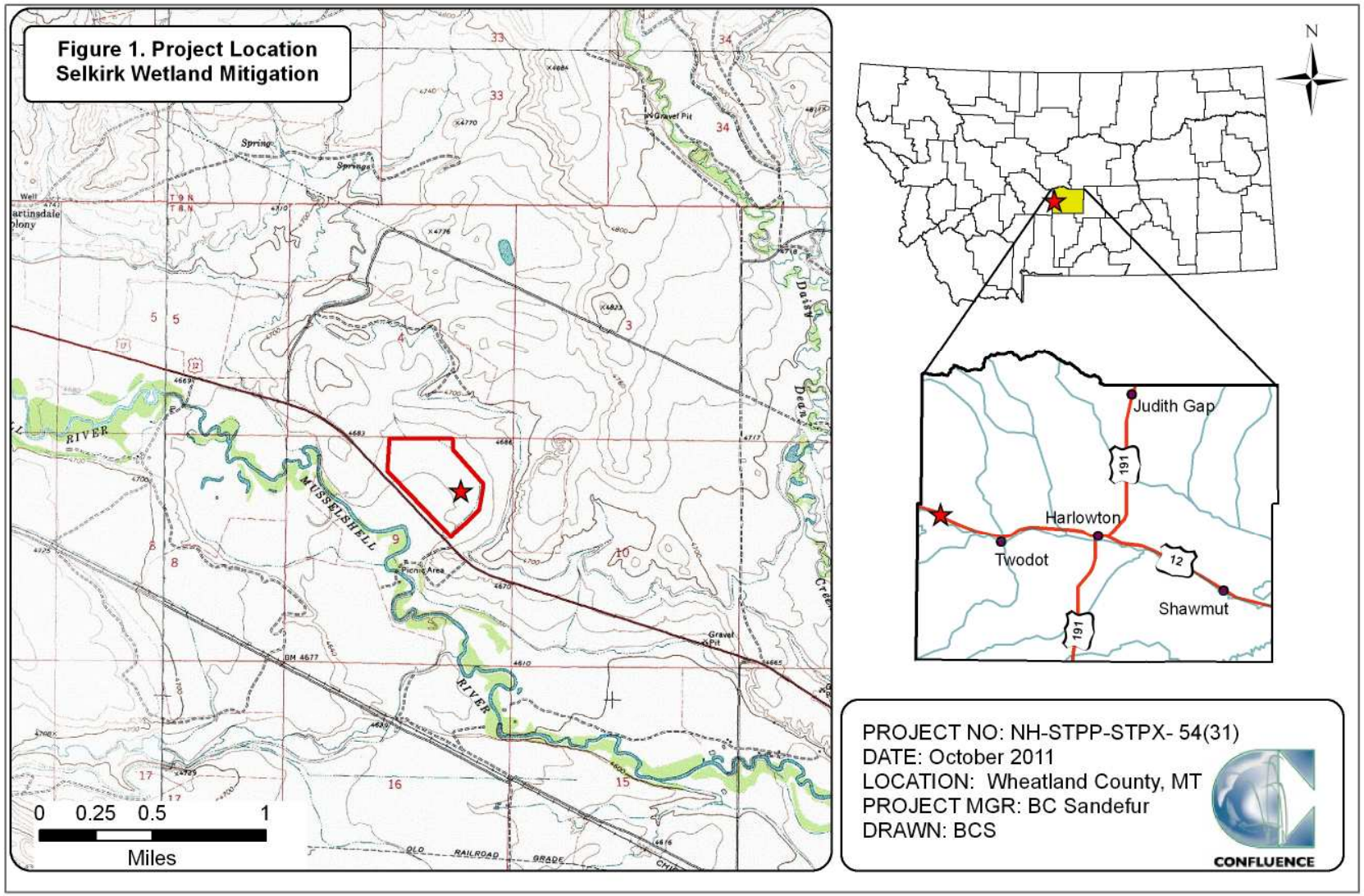

Figure 1. Project Location Selkirk Wetland Mitigation Reserve.

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The Primary Standards for performance as amended in 2010 are listed below.

1. Meet all three wetland criteria as defined in USACE Wetland Delineation Manual (Environmental Laboratory 1987).

2. Maximum noxious weed coverage is not to exceed 5 percent

3. Soil saturation in the upper 12 inches of the soil profile for a minimum of 12.5 percent of the growing season.

4. Aerial coverage of all plant species must be at least 80 percent and requires a 2-year survival period; bare ground shall not exceed 20 percent aerial coverage.

5. Permanent open water lacking persistent emergent vegetation or aquatic bed vegetation will comprise less than 15 percent of the total wetland project area and no single body is to exceed 3 acres.

6. Achieve a Category II functional rating.

2. METHODS

The site was visited on July 28, 2011. Monitoring activity sites were located with a global positioning system (GPS) (Figure 2, Appendix A). Mapped site features are shown on Figure 3 (Appendix A). Information contained on the Mitigation Monitoring Form and the Wetland Data Form was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix B). Information collected included wetland delineation, vegetation community mapping, vegetation transect monitoring, woody species evaluation, soil data collection, hydrology data collection, bird and wildlife use documentation, photographs, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

Technical criteria for wetland hydrology guidelines have been established as “permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (usually 14 days or more or 12.5 percent) during the growing season.” (Environmental Laboratory 1987). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered wetlands. The growing season is defined for purposes of this report as the number of days where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit (Environmental Laboratory 1987). The frost-free period defined for the region associated with the dominant map unit, Fairway loam, is 70 to 130 days (USDA 2010). Areas defined as wetlands would require a minimum of 9 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria.

Hydrological indicators as outlined on the Wetland Data Form were documented at four data points established within the project area. Hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on electronic field Wetland Data Forms (Appendix B). Hydrologic assessments allow evaluation of mitigation goals addressing inundation/saturation requirements.

Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data were recorded electronically on the delineation data form (Appendix B). Groundwater levels were measured in 11 monitoring wells in 2009. The wells were not measured during the 2010 or 2011 monitoring events.

2.2. Vegetation

The boundaries of general dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2011 aerial photograph. The percent cover of dominant species within a community type was estimated and recorded using the following ranges as listed on the monitoring form: 0 (< 1 percent), 1 (1-5 percent), 2 (6-10 percent), 3 (11-20 percent), 4 (21-50 percent), and 5 (>50 percent) (Appendix B).

Temporal changes in vegetation were evaluated through annual assessments of a static belt transect (Figure 2, Appendix A). Vegetation composition was assessed and recorded along a single vegetation belt transect approximately 10 feet wide and 445 feet long (Figure 2, Appendix A). The transect location was recorded with a GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. Percent cover of each vegetation species within the "belt" was estimated using the same values and cover ranges listed for the community polygon data shown on the aerial photograph (Appendix B). Photographs were taken at the endpoints of the transect during the monitoring event (Appendix C).

The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "**X**", "▲", or "■" representing 0 to 0.1 acre, 0.1 to 1.0 acre, or greater than 1.0 acre in extent, respectively. Cover classes listed on Figure 3 (Appendix A) are represented by T, L, M, or H, corresponding to less than 1 percent, 1 to 5 percent, 2 to 25 percent, and 25 to 100 percent, respectively.

Several species of wetland emergent plants, shrubs, and trees were installed or seeded throughout the site. Quantities of individual emergent species ranged from 50 to over 10,000. Approximately 4,750 stems were planted within netted browse guards and weed mats.

2.3. Soil

Soil information was obtained from the *Soil Survey for Wheatland County* (USDA 2010) and *in situ* soil descriptions. Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the USACE 1987 Wetland Delineation Manual. A description of the soil profile, including hydric indicators when present, was recorded on the Wetland Data Form for each profile (Appendix B).

2.4. Wetland Delineation

Waters of the US including jurisdictional wetlands and other special aquatic sites were delineated throughout the project area in accordance with criteria established in the 1987 USACE delineation manual. In order to delineate a representative area as wetland, the technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology must be satisfied. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). A Routine Level-2 Onsite Determination Method (Environmental Laboratory 1987) was used to delineate wetland areas within the project boundaries. The information was recorded electronically on the Wetland Data Form (Appendix B).

The USACE determined that the 1987 Wetland Manual should continue to be used at MDT mitigation sites where baseline wetland conditions had been established prior to 2008. Consequently, the use of the 2010 Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010b) was not required.

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was classified as an atypical situation, potential problem area, or special aquatic site, i.e., mudflat. The wetland boundary was identified on the 2011 aerial photograph. Wetland areas were estimated using geographic information system (GIS) methodology.

2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the Mitigation Monitoring Form during the site visit. Indirect use indicators, including tracks, scat, burrow, eggshells, skins, and bones, were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live

traps, and pitfall traps, were not used. A comprehensive wildlife species list for the entire site was compiled.

2.6. Functional Assessment

Functional assessments were completed from 2006 to 2011 using the 1999 MDT MWAM (Berglund 1999) for consistency. The functional assessment provides an objective means of assigning wetlands an overall rating and gives a means of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values (Berglund 1999).

Field data for this assessment were collected during the site visit. A Wetland Assessment Form was completed for each credit area as defined in mitigation plan (Assessment Areas (AA), Appendix B).

2.7. Photo Documentation

Monitoring at photo points provides supplemental information documenting the condition of the wetlands and uplands, trends, current land use surrounding the site, the monitored area, and the vegetation transects. Photographs were taken at established photo points throughout the mitigation site and at transect end points during the site visit (Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 2, Appendix A).

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2011 monitoring season. Points were collected using WAAS-enabled differential correction satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, exported into GIS, and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph, then digitized. Site features and survey points that were mapped included fence boundaries, photograph points, transect beginnings and endings, wetland boundaries, and vegetation boundaries.

2.9. Maintenance Needs

The outflow structures were checked for obstructions and other problems. Channels, structures, fencing, and other features were also examined during the site visit for obvious signs of breaching, damage, or other problems. This was a cursory examination and not an engineering-level structural inspection.

3. RESULTS

3.1. Hydrology

The average precipitation total from January 1893 to December 2010 at the Martinsdale 3NNW, Montana (245387) meteorological station, was 13.63 inches (WRCC 2011). The total precipitation recorded in 2010 was 16.13 inches, 2.5 inches above the 117 year average. The precipitation total for January through

May 4.46 and 10.32 inches in 2010 and 2011(NCDC), respectively. Precipitation in 2011 was 5.86 inches higher in 2011 versus 2010.

The primary source of hydrology for the wetland mitigation site is groundwater. The site was historically ditched in order to reduce groundwater levels and convey runoff and seepage from adjacent irrigation ditches. An 8-foot deep ditch was present along the north and east edges of the current site boundary. A 4-foot deep ditch in the southeast quarter branched north and northeast and flowed south under Highway 12 and through the Montana Fish, Wildlife and Parks, Selkirk Fishing Access. The Coulee Ditch entered the northwest edge of the site conveying surface water to the area that crosses several small ditches. Water was subsequently conveyed to the roadside ditch located southwest of the site.

A primary objective of the wetland design was to abandon and fill the 8-foot and 4-foot deep and shallow coulee ditch systems, and to reconstruct three shallow, meandering, bermed swales to slow and spread surface water. Three shallow ponds were also constructed. The swales intersected a shallow water area that was vegetated with emergent and aquatic plants. Lateral grade checks were constructed in the northwest area of the site to collect and spread water from the coulee.

There were 11 monitoring wells within the project site. Wells were measured by the environmental firm contracted to design and construct this project on June 16, 2009, after flood irrigation had begun for the season. The groundwater table was within 12 inches of the ground surface at MW-5, MW-7, and MW-9. Groundwater was 1 to 3 inches above the ground surface at wells MW-1, MW-2, MW-3, MW-4, MW-6, MW-8, and MW-11 in 2009 and displayed a positive post-construction response following the ditch plugging. Well MW-10 was destroyed when one of the ponds was constructed. Groundwater wells have not been monitored due to hydrology response in 2009.

The August 24, 2010, monitoring survey estimated that 40 percent of the site was inundated with an average site-wide water depth of 0.6 feet. Surface water depths ranged from 0.0 to 3.0 feet. In July 2011, an estimated 85 percent of the site was inundated with depths ranging up to 3.5 feet. The constructed ponds and large swale located near the west boundary appear to be perennially inundated. The swales in the northwest corner and center of the site were inundated at intermittent depths. All soils within wetlands delineated in 2011 exhibited either inundation or saturation within 12 inches of the soil surface and reflected success of the effort to increase the water table elevation throughout the site.

Data points S-1 to S-3 were located in areas that met the wetland criteria (Figure 2, Appendix A; Wetland Forms, Appendix B). The wetland hydrology indicators observed at these data points included saturation within 12 inches of the soil surface. Hydrology indicators at S-2 also included inundation to a depth of 1

inch. Data point S-4 was located along the northern boundary of the site in an upland community and did not display any hydrologic indicators.

3.2. Vegetation

A comprehensive list of 72 vegetation species identified at the site from 2007 to 2011 is shown in Table 1. Eight wetland and one upland vegetation community types were identified in 2011 (Figure 3, Appendix B). They included wetland Type 1 – *Typha latifolia/Alopecurus arundinaceus*, wetland Type 2 – *Alopecurus arundinaceus/Juncus balticus*, wetland Type 3 – *Carex* spp./*Juncus balticus*, wetland Type 4 – *Alopecurus arundinaceus/Scirpus maritimus*, upland Type 5 – *Bromus inermis/Agroyron repens*, wetland Type 6 – *Puccinellia airoides/Juncus balticus*, wetland Type 13 – *Salix exigua/Alopecurus arundinaceus*, wetland Type 14 – *Hordeum jubatum/Juncus balticus*, and wetland Type 18 – *Distichlis spicata/Puccinellia airoides*. A complete list of species within each community is presented on the Monitoring Form (Appendix B).

Community types 1 through 6 and 13 and 14 corresponded to the vegetation types identified in 2009. Community type 18 was defined for the first time in 2010. All community types observed in 2011 were consistent with the 2010 vegetation communities.

Wetland community Type 1 – *Typha latifolia/Alopecurus arundinaceus* covers approximately 27.7 acres across the site, including the constructed swales in the northwest corner of the site and the edge of the existing meandering swale and shallow water areas. Dominant species in descending order of abundance were broad-leaf cattail (*Typha latifolia*), creeping foxtail (*Alopecurus arundinaceus*), Baltic rush (*Juncus balticus*), and marsh arrow-grass (*Triglochin palustre*). Hardstem bulrush (*Scirpus acutus*), soft-stem bulrush (*Scirpus validus*), saltmarsh bulrush (*Scirpus maritimus*), beaked sedge (*Carex utriculata*), and 13 other species were identified within this community.

Wetland community Type 2 – *Alopecurus arundinaceus/Juncus balticus* was found in the center of the site and also replaced a large swath of community 4 along the northeast boundary in 2011. Creeping foxtail, Baltic rush, creeping spikerush (*Eleocharis palustris*), marsh arrow-grass, and fox-tail barley (*Hordeum jubatum*) were the dominant species in this community. Seashore saltgrass (*Distichlis spicata*), alkali bluegrass (*Poa juncifolia*), Nuttall's alkali grass (*Puccinellia airoides*), and ten other species each contributed less than one to five percent cover to this community. Although this community has seen an increase in the diversity of wetland plants, the coverage of creeping foxtail has not appeared to decrease in response to the increased inundation levels.

Wetland community Type 3 – *Carex* spp./*Juncus balticus* occupies just under 16 acres throughout the eastern half of the site. This community is characterized by the prevalence of beaked sedge, Nebraska sedge (*Carex nebrascensis*), clustered field sedge (*Carex praegracilis*), Baltic rush, and broad-leaf cattail. Creeping foxtail, hairy willow-herb (*Epilobium ciliatum*), soft-stem bulrush, blue-

Table 1. Vegetation species identified from 2007 to 2011.

Scientific Name	Common Name	Region 9 Indicator Status[1]
Agropyron repens	quackgrass	FACU
Agropyron trachycaulum	wheatgrass,slender	FAC
Agrostis alba	redtop	FACW
Agrostis stolonifera	bentgrass,spreading	FAC+
Alopecurus arundinaceus	foxtail,creeping	NI
Aster subspicatus	aster,Douglas'	FACW
Atriplex patula	saltbush,halberd-leaf	FACW
Beckmannia syzigachne	**sloughgrass,American**	**OBL**
Bromus inermis	smooth brome	NL
Calamagrostis canadensis	**reedgrass,blue-joint**	**FACW+**
Carex nebrascensis	sedge,Nebraska	OBL
Carex praegracilis	sedge,clustered field	FACW
Carex utriculata*	**beaked sedge**	**OBL**
Chenopodium album	goosefoot,white	FAC
Cicuta douglasii	water-hemlock,western	OBL
Cirsium arvense	thistle,creeping	FACU+
Cornus stolonifera	dogwood,red-osier	FACW
Deschampsia cespitosa	hairgrass,tufted	FACW
Distichlis spicata	saltgrass,seashore	FAC+
Eleocharis palustris	spikerush,creeping	OBL
Epilobium ciliatum	willow-herb,hairy	FACW-
Festuca arundinacea	fescue,Kentucky	FACU-
Festuca idahoensis	fescue,bluebunch	NL
Glyceria grandis	**American mannagrass**	**NL**
Glycyrrhiza lepidota	licorice,American	FAC+
Grindelia squarrosa	gumweed,curly-cup	FACU
Haplopappus lanceolatus	golden-weed,lance-leaf	FAC
Helianthus annuus	sunflower,common	FACU+
Hordeum jubatum	barley,fox-tail	FAC+
Iva axillaris	sumpweed,small-flower	FAC
Juncus balticus	rush,Baltic	OBL
Juncus effusus	**rush,soft**	**FACW+**
Juncus hallii	rush,Hall's	FAC
Juncus tenuis	rush,slender	FAC
Kochia scoparia	summer-cypress,Mexican	FAC
Lemna gibba	**duckweed,inflated**	**OBL**
Lepidium campestre	**field pepperweed**	**NL**
Lepidium latifolium	**pepper-grass,broad-leaf**	**FAC**
Lepidium perfoliatum	pepper-grass,clasping	FACU+
Medicago sativa	**alfalfa**	**NL**
Melilotus alba	sweetclover,white	FACU
Melilotus officinalis	sweetclover,yellow	FACU

[1]Region 9 Northwest (Reed 1988).

New species identified in 2010 are show in **bold** type.

*****Commonly accepted name not included on the 1988 list.

Table 1. (Continued). Vegetation species identified from 2007 to 2011.

Scientific Name	Common Name	Region 9 Indicator Status[1]
Mentha arvensis	mint,field	FAC
Phalaris arundinacea	grass,reed canary	FACW
Plantago major	plantain,common	FAC+
Poa juncifolia	bluegrass,alkali	FACU+
Poa pratensis	bluegrass,Kentucky	FACU+
Polypogon monspeliensis	grass,annual rabbit-foot	FACW+
Populus deltoides	cotton-wood,eastern	FAC
Potentilla anserina	silverweed	OBL
Puccinellia airoides	grass,nuttall alkali	OBL
Ranunculus gmelinii	butter-cup,small yellow water	FACW
Rumex crispus	dock,curly	FACW
Salicornia rubra	saltwort,red	OBL
Salix exigua	willow,sandbar	OBL
Salix lasiandra	**willow,Pacific**	**FACW+**
Salix lutea	**willow,yellow**	**OBL**
Scirpus acutus	bulrush,hard-stem	OBL
Scirpus maritimus	bulrush,saltmarsh	OBL
Scirpus microcarpus	**bulrush,small-fruit**	**OBL**
Scirpus pallidus	bulrush,cloaked	OBL
Scirpus pungens	bulrush,three-square	OBL
Scirpus validus	bulrush,soft-stem	OBL
Sisymbrium altissimum	mustard,tall tumble	FACU-
Solidago canadensis	golden-rod,Canada	FACU
Sonchus arvensis	sowthistle,field	FACU+
Sonchus asper	sowthistle,prickly	FAC-
Spartina pectinata	cordgrass,prairie	OBL
Suaeda depressa	seepweed,pursh	FACW-
Taraxacum officinale	dandelion,common	FACU
Triglochin palustre	arrow-grass,marsh	OBL
Typha latifolia	cattail,broad-leaf	OBL

[1]Region 9 Northwest (Reed 1988).
New species identified in 2010 are show in **bold** type.

joint reedgrass (*Calamagrostis canadensis*), hard-stem bulrush, and creeping thistle (*Cirsium arvense*) were recorded within community Type 3.

Wetland community Type 4 – *Alopecurus arundinaceus/Scirpus maritimus* parallels the east site boundary along the wetland margin and was dominated by creeping foxtail, saltmarsh bulrush, soft-stem bulrush, and field sowthistle (*Sonchus arvensis*). American licorice (*Glycyrrhiza lepidota*), yellow sweetclover (*Melilotus officinalis*), creeping thistle, field pepperweed (*Lepidium campestre*), and curly dock (*Rumex crispus*) each contributed less than one percent cover in community Type 4.

Upland community Type 5 – *Bromus inermis/Agroyron repens* was located around the upland perimeter of the project area. The vegetation species were

dominated by smooth brome (*Bromus inermis*), quackgrass (*Agropyron repens*), and creeping foxtail. Curly-cup gumweed, (*Grindella squarrosa*), small-flower sumpweed (*Iva axillaris*), alfalfa (*Medicago sativa*), field sowthistle, fox-tail barley, broad-leaf pepper-grass (*Lepidium latifolium*), and yellow sweetclover each comprise 1-5% of this upland community.

Wetland community Type 6 – *Puccinellia airoides/Juncus balticus* was situated near the center of the Selkirk mitigation wetland in a drier, slightly higher elevation than the majority of the surrounding wet meadow. The substantial increase in groundwater elevation that resulted from mitigation efforts has created wetland hydrology in this historic upland. A second area of community 6 is located on the eastern side of the long narrow swale that bisects the site. Dominant species include nuttall alkali grass, Baltic rush, seashore saltgrass, fox-tail barley, small-flower sumpweed, and creeping foxtail. Trace amounts of lance-leaf golden-weed (*Haplopappus lanceolatus*), alkali bluegrass, pursh seepweed (*Suaeda depressa*), and marsh arrow-grass were inventoried within this community.

Wetland community Type 13 – *Salix exigua/Alopecurus arundinaceus* was a small existing community located in the extreme south portion of the project area. This area receives hydrology from an irrigation return along this boundary of the site. The woody overstory was dominated by sandbar willow (*Salix exigua*) and Pacific willow (*Salix lasiandra*) with an herbaceous understory dominated by creeping foxtail, smooth brome, and Baltic rush. Lesser components of the understory included yellow sweet clover, alfalfa, American licorice, Nebraska sedge, common sunflower (*Helianthus annuus*), creeping thistle, spreading bentgrass (*Agrostis stolonifera*), and American sloughgrass (*Beckmania syzigachne*).

Wetland community Type 14 – *Hordeum jubatum/Juncus balticus* was identified in a small area north of the inundated swale in the west half of the project. The dominant species were foxtail barley, Baltic rush, clustered field sedge, and marsh arrow-grass with a trace amount of prickly sowthistle (*Sonchus asper*).

Wetland community Type 18 – *Distichlis spicata/Puccinellia airoides* adjoins community Type 6 along the slightly higher topography near the center of the project. This small community (0.57 acres) was characterized by seashore saltgrass and nuttall alkali grass, with lesser amounts of marsh arrow-grass, fox-tail barley, Baltic rush, clustered field sedge, and lance-leaf golden-weed.

Some open water areas were present within the site, including the constructed swales in the northwest corner of the site and some excavated depression within communities 1 and 2. These areas were typified by 1 to 2 feet of surface water and generally included rooted vegetation growing well into each area. Floating green algae and submerged aquatics were present in deeper water areas.

Transect one traverses the south central portion of the site from east to west (Figure 3 in Appendix A). It crosses the swale that bisects the property and contains areas of intermittent to perennial inundation. Transect one data trends from 2007 to 2011 are summarized in tabular (Table 2) and graphic (Charts 1 and 2) formats. The transect end points were photographed in the four cardinal directions (Pages C-4 through C-7, Appendix C). The transect intersected three wetland communities types 1, 2, and 6. One hundred percent of the transect was dominated by hydrophytic plants. Based on the transect summary in Table 2, vegetation diversity has steadily increased over the five years of monitoring.

Infestations of Canada thistle (*Cirsium arvense*), a Priorty 2B noxious weed, were mapped at five locations (Figure 3, Appendix A). The sizes of the infestations were less than 0.1 acre. The percent cover within each infestation ranged from low (less than 1 percent) to moderate (5 to 25 percent). Isolated Canada thistle plants were observed in community Types 1, 3, 4, and 13.

Table 2. Data summary from 2007 to 2011 for Transect 1.

Monitoring Year	**2007**	**2008**	**2009**	**2010**	**2011**
Transect Length (feet)	445	445	445	445	445
Vegetation Community Transitions along Transect	3	3	3	3	3
Vegetation Communities along Transect	3	3	3	3	3
Hydrophytic Vegetation Communities along Transect	3	3	3	3	3
Total Vegetation Species	12	12	12	18	19
Total Hydrophytic Species	10	11	11	13	14
Total Upland Species	2	1	1	5	5
Estimated % Total Vegetative Cover	100	100	100	100	100
% Transect Length Comprising Hydrophytic Vegetation Communities	100	100	100	100	100
% Transect Length Comprised of Upland Vegetation Communities	0	0	0	0	0
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	0
% Transect Length Comprising Bare Substrate	0	0	0	0	0

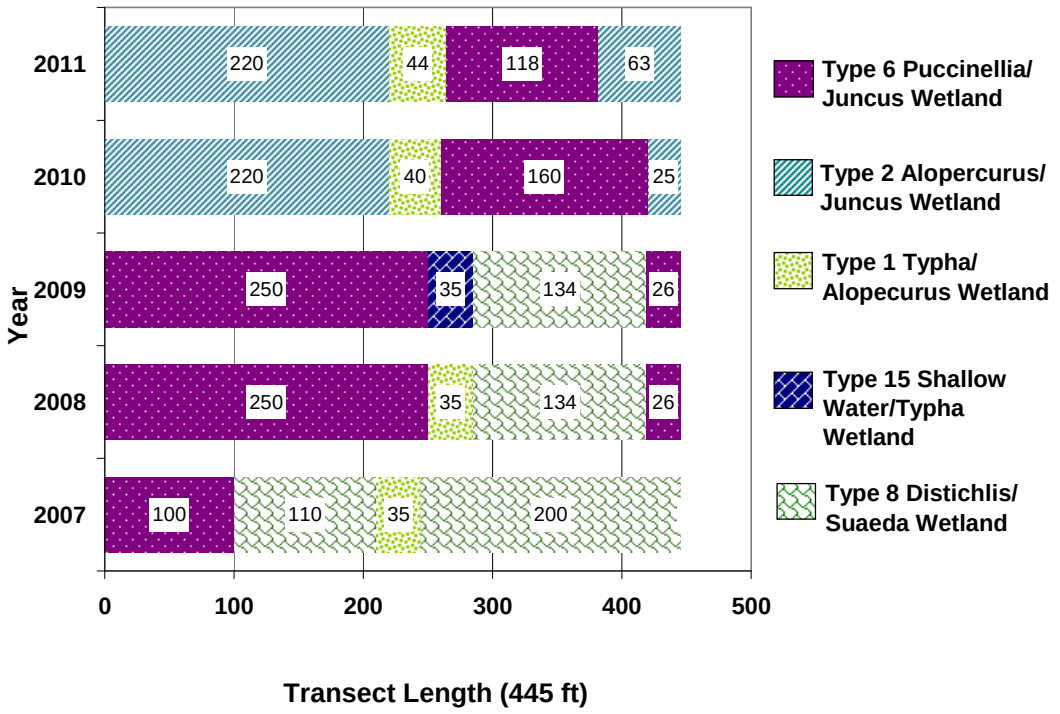

Chart 1. Maps of community types from the beginning (0 feet) to end of Transect 1 (445 feet) from 2007 to 2011.

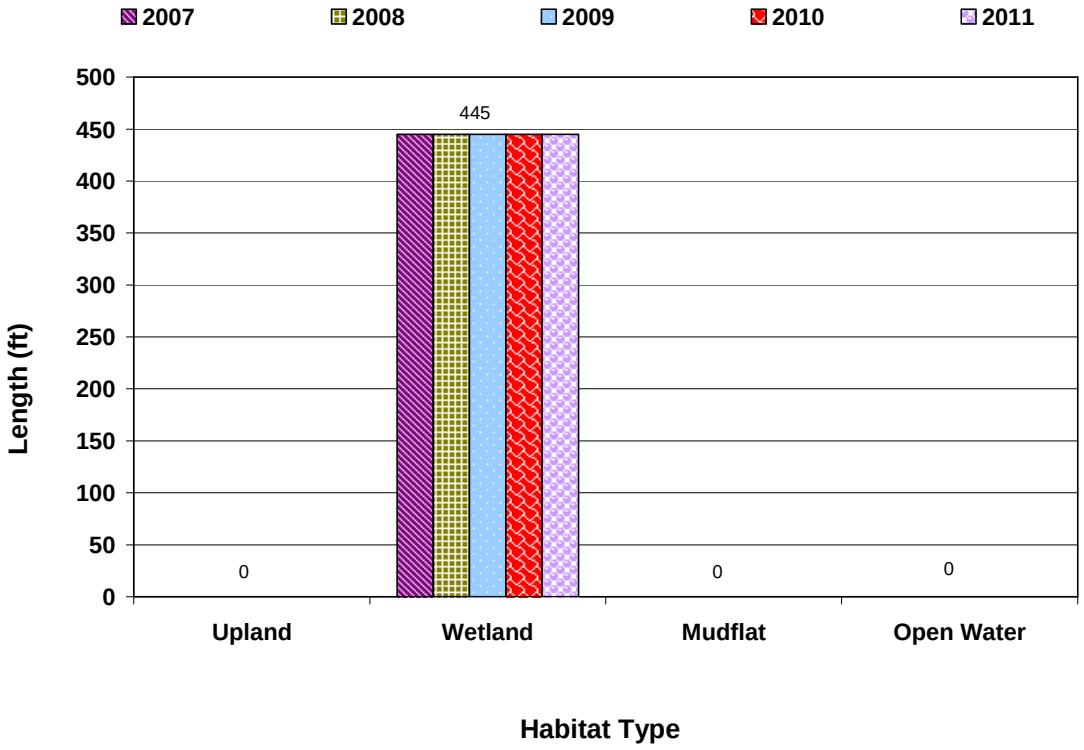

Chart 2. Length of habitat types within Transect 1 from 2007 to 2011.

The 2007 monitoring report noted that 24 woody species pods with approximately 4,750 woody stems were planted to meet the 500 stem count/acre criteria. Each plant was not counted in 2007, the first year of monitoring for woody species survival. The pods were reviewed and survivorship was estimated based on the viability of the stem. Survivorship for the first planting season was approximately 60 percent. No live woody plants were noted in 50 percent of the pods in 2009. Similar mortality was observed in 2010. Live woody plants were absent in over 50 percent of the pods. The remaining pods exhibited limited survival. Between 5 and 15 percent of the stems were green and bore leaves. Approximately 10 percent of the total number of stems originally planted was alive in 2010. The same survival rates were observed in 2011. All pods were investigated, with only five pods supporting any live willows. Four of the five pods showed less than five percent survival. One pod, just east of the center open water cell, displayed approximately 20 percent survival. In general, there were very low numbers of yellow willow (*Salix lutea*) and planeleaf willow (*Salix planifolia*) surviving along side of sandbar willow (*Salix exigua*), which was the dominant surviving woody species. Prolonged periods of inundation throughout the planted woody vegetation cells may and high water table around the root zones may have been the cause of the high mortality rate. No volunteer woody plants were observed within the mitigation site.

3.3. Soil

The predominant soil map unit within the Selkirk mitigation wetland is the somewhat poorly drained Fairway Loam with a hydric Swampcreek component (USDA 2010). The Fairway silt loam is classified as a fine-loamy, mixed, superactive, frigid Fluvaquentic Haplustoll. Soils along the northeastern boundary have been mapped as the Shambo series, which consist of deep, well-drained soils formed in calcareous alluvium mainly from soft sandstone and is classified as a frigid Typic Haplustolls. An area of Larry loam was mapped near the center of the site and includes very deep, poorly drained frigid Typic Endoaquolls. A small area along the southern boundary of the site was mapped as Nesda-Meadowcreek-Fluvaquentic haplaquolls complex. Nesda consist of frigid Fluventic Haplustolls commonly found on floodplains and stream terraces. Meadowcreek is classified as frigid Fluvaquentic Haplustolls commonly mapped along flood plains, drainageways and stream terraces. With the exception of the Shambo series, all mapped soils within the mitigation project boundary are identified on Montana Hydric Soils list.

Soils in test pit S-1 (Nesda-Meadowcreek-Fluvaquentic haplaquolls complex) were dark grayish brown (10YR 4/2) silt loam with dark yellowish brown (10YR 4/4) redoximorphic concentrations. Test pit S-2, S-3, and S-4 were all located within an area mapped as Shambo. In general, these soils were clay loams with a dark grayish brown(10YR 4/2) upper horizon overlaying a lighter (10YR 5/2 & 10YR 6/2) lower horizon. Soils in test pits S-1 through S-3 were classified as hydric based on a low chroma matrix with dark yellowish brown concentrations. The soil at test pit S-4 exhibited a similar color matrix as the nearby pits, yet did

not support concentrations within the matrix to classify as hydric. The test pits generally confirmed the soil units mapped by the NRCS.

3.4. Wetland Delineation

Four data points, S-1 through S-4 were employed to refine the wetland boundary in 2011. Data points S-1 through S-3 were situated within the delineated wetland, while S-4 was an upland pairing to S-2 and S-3. The wetland vegetation, soil and hydrology criteria were met at the S-1, S-2, and S-3 data points. *Alopecurus arundinaceus* (creeping foxtail) was a dominant plant within data points S-1, S-2, and S-3. The 1988 Plant List Region 9 indicator status for creeping foxtail is "NI" and the national indicator is "FACW?" Based on professional experience and evaluation of associated species commonly observed alongside this species, creeping foxtail was considered a wetland species and permited the vegetation community to be classified as hydrophytic in wetland communities throughout the site. Data point S-4, located in a slight upland rise from wetland community Type 2, did not support hydrophytic vegetation, hydric soils, or wetland hydrology. Smooth brome (*Bromus inermis*) was a dominant species in community Type 5 and was not listed on the 1988 Plant list, "NI". This species was considered to be an upland plant based on associated plants within this community. Wetlands encompassed 71.25 acres within the mitigation boundary (Table 3), an increase of 1.1 acre from 2010. This data follows a trend of continued wetland development at this site. The increase in wetland acreage was delineated in the creation mitigation area. The Wetland Data Forms are included in Appendix B.

Table 3. Wetland acres identified in 2011.

Habitat	2009 (acres)	2010 (acres)	2011 (acres)
Wetlands	69.50	70.15	71.25

3.5. Wildlife

The seventeen bird species identified in July 2011 are bolded in Table 4. A total of 49 avian species have been observed since June of 2007, including the S3B sensitive species long-billed curlew and white-faced ibis observed by the landowner and the S3B bobolink observed during 2011 monitoring efforts. Mammals observed during the 2011 investigation included a common gartersnake, a deer mouse, a striped skunk, and three white-tailed deer. Muskrat burrows were also noted within the meandering swale and inundated cattails. Eight bluebird and four wood duck nesting structures were installed on the site in 2007 and were in use in 2011.

Table 4. Wildlife species observed at the Selkirk Wetland Mitigation Reserve from 2007 to 2011.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIAN	
Western Chorus Frog	*Pseudacris triseriata*
BIRD	
American Coot	***Fulica americana***
American Goldfinch	*Spinus tristus*
American Robin	*Turdus migratorius*
American Wigeon	*Anas americana*
Barn Swallow	*Hirundo rustica*
Black-billed Magpie	***Pica hudsonia***
Blue-winged Teal	*Anas discors*
Bobolink	***Dolichonyx oryzivorus***
California Gull	*Larus californicus*
Canada Goose	***Branta canadensis***
Cinnamon Teal	*Anas cyanoptera*
Common Raven	*Corvus corax*
Common Yellowthroat	*Geothlypis trichas*
Eared Grebe	*Podiceps nigricollis*
Franklin's Gull	***Leucophaeus pipixcan***
Gadwall	*Anas strepera*
Golden Eagle	*Aquila chrysaetos*
Greater Yellowlegs	*Tringa melanoleuca*
Green-winged Teal	***Anas crecca***
Killdeer	*Charadrius vociferus*
Lesser Yellowlegs	*Tringa flavipes*
Long-billed Curlew	*Numenius americanus*
Mallard	*Anas platyrhynchos*
Marbled Godwit	*Limosa fedoa*
Marsh Wren	***Cistothorus palustris***
Mourning Dove	***Zenaida macroura***
Northern Harrier	*Circus cyaneus*
Northern Pintail	*Anas acuta*
Northern Shoveler	*Anas clypeata*
Pine Siskin	***Spinus pinus***
Red-tailed Hawk	***Buteo jamaicensis***
Red-winged Blackbird	***Agelaius phoeniceus***
Ring-necked Duck	*Aythya collaris*
Sandhill Crane	***Grus canadensis***
Savannah Sparrow	*Passerculus sandwichensis*

Species identified in 2011 are listed in **bold** type.

Table 4 (Continued). Wildlife observed at the Selkirk Wetland Mitigation Reserve from 2007 to 2011.

COMMON NAME	SCIENTIFIC NAME
BIRD	
Short-eared Owl	*Asio flammeus*
Snow Goose	***Chen caerulescens***
Solitary Sandpiper	*Tringa solitaria*
Song Sparrow	***Melospiza melodia***
Sora	*Porzana carolina*
Spotted Sandpiper	*Actitis macularius*
Stilt Sandpiper	*Calidris himantopus*
Tree Swallow	***Tachycineta bicolor***
Turkey Vulture	*Cathartes aura*
Western Meadowlark	***Sturnella neglecta***
White-faced Ibis	*Plegadis chihi*
Wilson's Phalarope	*Phalaropus tricolor*
Wilson's Snipe	*Gallinago delicata*
Yellow-headed Blackbird	***Xanthocephalus xanthocephalus***
MAMMAL	
American Mink	*Mustela vison*
Deer Mouse	***Peromyscus maniculatus***
Mule Deer	*Odocoileus hemionus*
Muskrat	***Ondatra zibethicus***
Raccoon	***Procyon lotor***
Red Fox	*Vulpes vulpes*
Striped Skunk	***Mephitis mephitis***
White-tailed Deer	***Odocoileus virginianus***
REPTILE	
Common Gartersnake	***Thamnophis sirtalis***

Species identified in 2011 are listed in **bold** type.

3.6. Functional Assessment

Functional assessments were completed for three AAs in 2011 (Table 5) and correspond with the credit ratios approved by the USACE prior to construction activities. The AAs include the 1-acre enhancement area located in the southern region of the property, the 31.99-acre rehabilitation area, and the 38.26-acre creation area that are illustrated in Figure 4 in Appendix A. The 1999 MWAM continued to be used in 2011 for consistency (Berglund 1999). The functional assessment forms are included in Appendix B.

Table 5. Summary of the 2006 to 2011 wetland function/value ratings and functional points at the Selkirk Wetland Mitigation Reserve.

Function and Value Parameters from the MDT Montana Wetland Assessment Method[1]	Rehabilitation					
	2006	2007	2008	2009	2010	2011
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Low (0.0)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Wildlife Habitat	Low (0.3)	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA
Flood Attenuation	NA	Mod (0.5)	Mod (0.5)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Short and Long Term Surface Water Storage	Low (0.3)	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.6)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	NA	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.7)	Mod (0.7)	High (0.8)	High (0.8)	High (0.9)	High (0.9)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.1)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential	Low (0.1)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Actual Points / Possible Points	**3.1 / 9**	**7.7 / 11**	**8.4 / 11**	**8.5 / 11**	**8.6 / 11**	**8.6 / 11**
% of Possible Score Achieved	**34%**	**70%**	**76%**	**77%**	**78%**	**78%**
Overall Category	**III**	**II**	**II**	**II**	**II**	**II**
Total Acreage of Assessed Aquatic Habitat within AA Boundaries	**31.90**	**31.90**	**31.99**	**31.90**	**31.99**	**31.99**
Functional Units (acreage x actual points)	**98.90**	**245.63**	**268.72**	**271.2**	**275.1**	**275.1**

[1](Berglund 1999).

Table 5 (Continued). Summary of the 2006 to 2011 wetland function/value ratings and functional points at the Selkirk Wetland Mitigation Reserve.

Function and Value Parameters from the MDT Montana Wetland Assessment Method[1]	Enhancement					
	2006	2007	2008	2009	2010	2011
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Low (0.0)	Mod (0.7)	Mod (0.7)	Low (0.0)	Low (0.0)	Mod (0.7)
General Wildlife Habitat	Mod (0.5)	Mod (0.7)	High (0.9)	High (0.9)	High (0.9)	Exc. (1.0)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA
Flood Attenuation	NA	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)	Low (0.2)
Short and Long Term Surface Water Storage	Low (0.2)	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Sediment/Nutrient/Toxicant Removal	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	NA	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.6)	Mod (0.7)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential	Low (0.1)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Actual Points / Possible Points	**3.6 / 9**	**6.6 / 11**	**7.4 / 11**	**6.7 / 11**	**6.7 / 11**	**7.5 / 11**
% of Possible Score Achieved	**43%**	**60%**	**67%**	**61%**	**61%**	**68%**
Overall Category	**III**	**III**	**II**	**II**	**II**	**II**
Total Acreage of Assessed Aquatic Habitat within AA Boundaries	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Functional Units (acreage x actual points)	**3.6**	**6.6**	**7.4**	**6.7**	**6.7**	**7.5**

[1](Berglund 1999).

Table 5 (Continued). Summary of the 2006 to 2011 wetland function/value ratings and functional points at the Selkirk Wetland Mitigation Reserve.

Function and Value Parameters from the MDT Montana Wetland Assessment Method[1]	Creation				
	2007	2008	2009	2010	2011
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Wildlife Habitat	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.5)	Mod. (0.5)	Mod. (0.6)	Mod. (0.6)	Mod. (0.6)
Short and Long Term Surface Water Storage	High (0.9)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Nutrient/Toxicant Removal	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Mod (0.6)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.7)	High (0.8)	High (0.8)	High (0.9)	High (0.9)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Mod (0.6)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Actual Points / Possible Points	**7.6 / 11**	**8.4 / 11**	**8.5 / 11**	**8.6 / 11**	**8.56 / 11**
% of Possible Score Achieved	**69%**	**76%**	**77%**	**78%**	**78%**
Overall Category	**II**	**II**	**II**	**II**	**II**
Total Acreage of Assessed Aquatic Habitat within AA Boundaries	**32.90**	**34.23**	**36.51**	**37.16**	**38.26**
Functional Units (acreage x actual points)	**250.00**	**272.41**	**310.3**	**319.6**	**327.5**

[1](Berglund 1999).

The three mitigation credit areas, excluding upland buffer, were classified as Category II wetlands in 2009. The re-establishment/creation credit area was considered upland prior to construction. The 2006 baseline assessment did not include this area. The rehabilitation mitigation area was classified as a Category III wetland in 2006 and a Category II wetland from 2007 to 2011. The enhanced wetland was classified as a Category III wetland in 2006 and 2007 and as a Category II wetland from 2008 to present.

The wetland area within the creation AA increased by 1.1 acres in 2011. This AA increased in structural diversity in 2010 with the establishment of submerged and floating vegetation, which resulted in a corresponding increase of 9.3 functional units. Scores for this area were consistent between 2010 and 2011. The highest ratings were for general wildlife habitat, short and long term surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, groundwater discharge and recharge, and recreation/education potential.

The wetland area within the rehabilitated AA increased by 0.09 acres in 2010 via the conversion of upland to wetland. The ratings, functional points, and percent score also increased with the development of submerged and floating vegetation between 2009 to 2010. Ratings were consistent between 2010 and 2011. Ratings were high for short and long term surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, groundwater discharge/recharge, and recreation/education potential.

The enhancement AA is a one-acre wetland located near the outlet of the wetland complex and receives most of the water flowing out of the site. This area was flooded by the Musselshell River in May/June 2011. The highest ratings were for general wildlife habitat, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, groundwater discharge/recharge, and recreation/education potential. The enhancement area increased 0.7 points in 2011 with the documented secondary habitat for the White-faced ibis.

3.7. Photo Documentation

Representative photos taken from photo points and transect ends are included in Appendix C. Photo points PP1 to PP4 are shown on Pages C-1 to C-6 and Photo point PP5 is shown on C-11. Photographs in the four cardinal directions of the transect beginning and end are shown on pages C-7 to C-10. Photographs of the four data points are shown on page C-12.

3.8. Maintenance Needs

Infestations of Canada thistle, a Priority 2B noxious weed, were identified at five locations in 2011 (Figure 3, Appendix A). The sizes of the infestations were less than 0.1 acre. The percent cover within each infestation ranged from low (less than 1 percent) to moderate (5 to 25 percent). The weeds were sprayed by the landowner in spring 2010. Additional weed spraying is recommended to address the five infestations identified in 2011.

Eight bluebird and four wood duck structures were installed on the site. The structures are being used and are in good working order. One of the duck boxes, located nearest to PP1, was tilted unevenly as a result of frost heave and should be reset to facilitate use.

3.9. Current Credit Summary

The estimated wetland credits for 2011 based on the mitigation types creation, rehabilitation, enhancement, and upland buffer are shown in Table 6. Approximately 71.25 acres of wetland were delineated site wide in 2011, an increase of 1.1 acres from 2010. The creation AA included 38.26 acres of wetland. The enhancement AA comprised 1.0 acre of the site and the rehabilitation AA was 31.99 acres in size. All three wetland mitigation areas were rated as Category II in 2011. The upland buffer credit was based on the existing upland acreage of 2.35 acres.

The intent of the 74.4-acre Selkirk Mitigation Reserve was to provide MDT with 50 acres of wetland mitigation credit prior to Highway 12 road construction in Watershed 10. The reserve was constructed to encompass approximately 71.5 acres of herbaceous wet meadow wetland, scrub/shrub wetland, and open water, and 2.9 acres of upland buffer. Overall, the mitigation site was designed to provide a total net of approximately 60.4 acres of wetland credit after applying various credit ratios and after accounting for 0.4 acre for wetland fill associated with project construction.

The existing performance standards were amended in a letter from the USACE dated March 29, 2010, as discussed in Section 1.0. The amendment addressed the current method of awarding credits from a pass/fail system to a credit-reduction based methodology. The USACE and MDT will negotiate an appropriate credit ratio reduction if the primary standards are not met in full. Site conditions in 2011 were compared against the performance standards listed in Section 1. The three wetland criteria were met for all areas identified on Figure 3 (Appendix A) as wetlands. The weed infestations were located primarily in the perimeter of the mitigation site and in the northwest corner. The percent weed cover did not exceed five percent site-wide in 2011. Soil saturation within 12 inches of the ground surface and inundation was evident site-wide based on data collected at sample points and on the presence and extent of hydrophytic vegetation communities. The aerial vegetation coverage exceeded 80 percent site-wide. The open water areas contain persistent emergent vegetation and aquatic bed vegetation and there was no single open water body that exceeded three acres.

The functional lift standard requires an assurance of a functional lift with the most favorable credit ratios awarded if wetland assessment areas achieve a Category II status or better (USACE 2010). The functional lift evaluation was based on the 1999 MDT MWAM (Berglund 1999). The creation, rehabilitation, and enhancement assessment areas have achieved a Category II rating.

Table 6. The 2011 estimated mitigation credit acreage for the Selkirk Wetland Mitigation Reserve.

Mitigation Type	Proposed Credit Acreage	2009 Acres	2010 Acres	2011 Acres	Credit Ratio	2011 Wetland Credits
1 - Creation	38.6	36.51	37.16	38.26	1.1	38.3
2 - Rehabilitation	31.9	31.9	31.9	31.99	1.5:1	21.3
3 - Enhancement	1	1	1.00	1.00	3:1	0.3
4 - Upland Buffer*	2.9	4.59	2.90	2.35	5:1	0.5
Wetland Fill		-0.4	-0.4	-0.4	-	-0.4
TOTAL						**60.0****

*Upland credit acreage based on original proposed acreage in mitigation plan. The digital site boundary provided to Confluence defined a project area 73.6 acres in size. The conservation easement encompasses 74.4 acres and is assumed to extend into the uplands surround the defined project area.

**MDT can only utilized 50 acres of credit from site, with option to purchase more at a later date.

4. REFERENCES

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Appendix A

Figures 2, 3, and 4

MDT Wetland Mitigation Monitoring
Selkirk Wetland Mitigation Reserve
Wheatland County, Montana

Figure 2: 2011 Monitoring Activity Locations

Legend

- Vegetation Transect
- Monitoring Limits
- Data Point
- Photo Point
- Bluebird Box
- Wood Duck Boxes

Base Photography Date: August 17, 2011

S-3
S-4
S-2
PP1
PP2
PP3
T-1 Start
T-1 Finish
PP5
PP4
S-1

0 125 250 500
Feet

GRAPHICAL REPRESENTATION MAY OR MAY NOT DEPICT THE LEGAL DESCRIPTION OF ANY PARCEL HEREIN. THIS FIGURE IS A VISUAL AID ONLY; BOUNDARY RESTORATION MUST BE MADE BY A LICENSED LAND SURVEYOR. THIS FIGURE IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. CONFLUENCE MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Wheatland Co., MT

PROJECT NO: NH-STPP-STPX 54(31)

FILE: Selkirk/Monitor2011.mxd

Project Name
Selkirk Wetland Mitigation Site

Drawing Title
2011 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted

Drawn: October 4, 2011

PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure 2

REV -

Figure 3: 2011 Mapped Site Features

Vegetation Community Types

1 Typha latifolia/Alopecurus arundinaceus
2 Alopecurus arundinaceus/Juncus balticus
3 Carex spp/Juncus balticus
4 Alopecurus arundinaceus/Scirpus maritimus
5 Bromus inermis/Agropyron repens
6 Puccinellia airoides/Juncus balticus
13 Salix exigua/Alopecurus arundinaceus
14 Hordeum jubatum/Juncus balticus
18 Distichlis spicata/Puccinellia airoides

Legend

Monitoring Limits
Wetland Limits
Vegetation Communities
Base Photography Date: August 17, 2011

Noxious Weeds

Cirsium arvense
Infestation SIze
X = <0.1 acre
▲ = 0.1 to 1 acre
■ = 1 to 5 acre
Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover)
M = Moderate (5-25% cover)
H = High (25-100% cover)

0 125 250 500
Feet

Acreages

Project Area	73.60 acres
Wetlands	71.25 acres
Uplands	2.35 acres

LOCATION: Wheatland Co., MT
PROJECT NO: NH-STPP-STPX 54(31)
FILE: Selkirk/Veg2011.mxd

Project Name: Selkirk Wetland Mitigation Site
Drawing Title: 2011 Mapped Site Features

DRAWN BCS | CHECKED BV | APPROVED JJ
SCALE: Noted
Drawn: October 4, 2011
PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

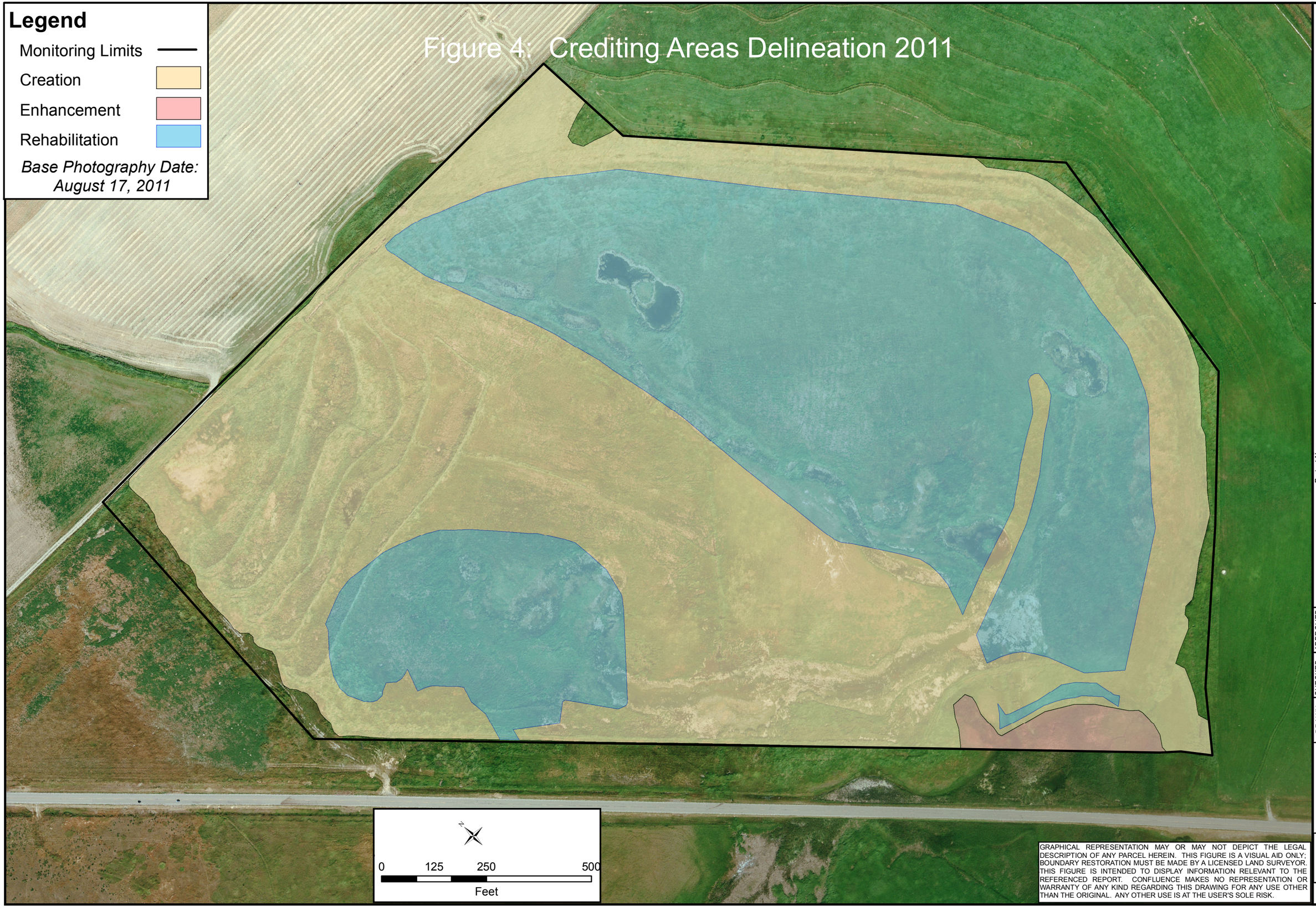
REV -

Figure 4: Crediting Areas Delineation 2011

Legend

- Monitoring Limits
- Creation
- Enhancement
- Rehabilitation

Base Photography Date: August 17, 2011



GRAPHICAL REPRESENTATION MAY OR MAY NOT DEPICT THE LEGAL DESCRIPTION OF ANY PARCEL HEREIN. THIS FIGURE IS A VISUAL AID ONLY; BOUNDARY RESTORATION MUST BE MADE BY A LICENSED LAND SURVEYOR. THIS FIGURE IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. CONFLUENCE MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Wheatland Co., MT

PROJECT NO: NH-STPP-STPX 54(31)

FILE: Selkirk/CreditAreas.mxd

Project Name
Selkirk Wetland Mitigation Site

Drawing Title
Crediting Areas Delineation 2011

DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted

Drawn: October 4, 2011

PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure 4

REV -

Appendix B

2011 MDT Wetland Mitigation Site Monitoring Form
2011 USACE Wetland Determination Data Form
2011 MDT Montana Wetland Assessment Form

MDT Wetland Mitigation Monitoring
Selkirk Wetland Mitigation Reserve
Wheatland County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Selkirk Assessment Date/Time 7/28/2011 8:10:27 AM

Person(s) conducting the assessment: B. Sandefur, L. Soderquist

Weather: Clear & sunny, slight breeze, war Location: Two Dot, MT

MDT District: Billings Milepost: NA

Legal Description: T 8N R 12E Section(s) NE1/4 Sec. 9

Initial Evaluation Date: 8/22/2007 Monitoring Year: 5 #Visits in Year: 1

Size of Evaluation Area: 73.6 (acres)

Land use surrounding wetland:

Agriculture, hay production

HYDROLOGY

Surface Water Source: Groundwater

Inundation: ☑ Average Depth: 0.1 **(ft)** Range of Depths: 0.1-3.5 **(ft)**

Percent of assessment area under inundation: 85 %

Depth at emergent vegetation-open water boundary: 0.5 **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: Yes

Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc:

Drainage patterns, aquatic invertebrates

Groundwater Monitoring Wells

Record depth of water surface below ground surface, in feet.

Well ID	Water Surface Depth (ft)
No wells	

Additional Activities Checklist:

☑ Map emergent vegetation-open water boundary on aerial photograph.

☑ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)

☐ Use GPS to survey groundwater monitoring well locations, if present.

Hydrology Notes:

VEGETATION COMMUNITIES

Site Selkirk

(Cover Class Codes **0** = < 1%, **1** = 1-5%, **2** = 6-10%, **3** = 11-20%, **4** = 21-50% , **5** = >50%)

* Indicates accepted spp name not on '88 list.

Community # 1 **Community Type:** Typha latifolia / Alopecurus arundinaceus **Acres:** 27.7

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Carex utriculata*	1
Cicuta douglasii	1	Cirsium arvense	0
Deschampsia cespitosa	0	Eleocharis palustris	1
Epilobium ciliatum	0	Glyceria grandis	0
Juncus balticus	3	Lemna gibba	0
Mentha arvensis	0	Potentilla anserina	0
Salix exigua	0	Salix lasiandra	0
Salix lutea	0	Scirpus acutus	1
Scirpus maritimus	0	Scirpus validus	0
Sonchus arvensis	1	Triglochin palustre	3
Typha latifolia	5		

Comments:

Community # 2 **Community Type:** Alopecurus arundinaceus / Juncus balticus **Acres:** 22.43

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Carex nebrascensis	0
Distichlis spicata	0	Eleocharis palustris	4
Hordeum jubatum	2	Juncus balticus	5
Juncus effusus	0	Medicago sativa	0
Melilotus officinalis	0	Poa juncifolia	0
Puccinellia airoides	0	Scirpus acutus	1
Scirpus maritimus	0	Scirpus microcarpus	0
Scirpus validus	1	Sonchus arvensis	0
Triglochin palustre	3	Typha latifolia	1

Comments:

Community # 3 **Community Type:** Carex spp. / Juncus balticus **Acres:** 15.85

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	0	Calamagrostis canadensis	0
Carex nebrascensis	1	Carex praegracilis	1
Carex utriculata*	2	Cirsium arvense	0
Epilobium ciliatum	2	Hordeum jubatum	1
Juncus balticus	5	Scirpus acutus	1
Scirpus validus	0	Typha latifolia	3

Comments:

Community # 4 **Community Type:** Alopecurus arundinaceus / Scirpus maritimus **Acres:** 2.37

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Cirsium arvense	0
Glycyrrhiza lepidota	0	Lepidium campestre	0
Melilotus officinalis	0	Rumex crispus	0
Scirpus maritimus	2	Scirpus validus	1
Sonchus arvensis	2		

Comments:

Community # 5 **Community Type:** Bromus inermis / Agropyron repens **Acres:** 2.35

Species	Cover class	Species	Cover class
Agropyron repens	3	Alopecurus arundinaceus	2
Bromus inermis	5	Grindelia squarrosa	1
Hordeum jubatum	1	Iva axillaris	1
Lepidium latifolium	1	Medicago sativa	1
Melilotus officinalis	1	Sonchus arvensis	1

Comments:

Community # 6 **Community Type:** Puccinellia airoides / Juncus balticus **Acres:** 1.25

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	2	Distichlis spicata	4
Haplopappus lanceolatus	0	Hordeum jubatum	4
Iva axillaris	3	Juncus balticus	2
Poa juncifolia	0	Puccinellia airoides	4
Suaeda depressa	0	Triglochin palustre	0

Comments:

Community # 13 Community Type: Salix exigua / Alopecurus arundinaceus **Acres:** 0.12

Species	Cover class	Species	Cover class
Agrostis stolonifera	0	Alopecurus arundinaceus	4
Beckmannia syzigachne	0	Bromus inermis	2
Carex nebrascensis	1	Cirsium arvense	1
Glycyrrhiza lepidota	1	Helianthus annuus	1
Juncus balticus	2	Medicago sativa	1
Melilotus officinalis	1	Salix exigua	5
Salix lasiandra	1	Triglochin palustre	0
Typha latifolia	1		

Comments:

Community # 14 Community Type: Hordeum jubatum / Juncus balticus **Acres:** 0.94

Species	Cover class	Species	Cover class
Carex praegracilis	3	Hordeum jubatum	4
Juncus balticus	4	Poa juncifolia	1
Sonchus asper	0	Triglochin palustre	3

Comments:

Community # 18 Community Type: Distichlis spicata / Puccinellia airoides **Acres:** 0.57

Species	Cover class	Species	Cover class
Carex praegracilis	1	Distichlis spicata	5
Haplopappus lanceolatus	0	Hordeum jubatum	2
Juncus balticus	2	Puccinellia airoides	4
Suaeda depressa	1	Triglochin palustre	2

Comments:

Total Vegetation Community Acreage **73.58**

(Note: some area within the project bounds may be open water or other non-vegetative ground cover.)

VEGETATION TRANSECTS

Site: Selkirk Date: 7/28/2011 8:10:27 AM

Transect Number: 1 **Compass Direction from Start:** 280

Interval Data:

Ending Station 220 **Community Type:** Alopecurus arundinaceus / Juncus balticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	4	Carex nebrascensis	0
Distichlis spicata	1	Eleocharis palustris	2
Hordeum jubatum	1	Juncus balticus	3
Juncus effusus	1	Medicago sativa	0
Melilotus officinalis	0	Puccinellia airoides	1
Scirpus acutus	2	Scirpus maritimus	2
Scirpus validus	2	Sonchus arvensis	1
Triglochin palustre	0	Typha latifolia	3

Ending Station 264 **Community Type:** Typha latifolia / Alopecurus arundinaceus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	2	Eleocharis palustris	1
Juncus balticus	1	Scirpus acutus	1
Scirpus maritimus	1	Scirpus validus	1
Typha latifolia	5		

Ending Station 382 **Community Type:** Puccinellia airoides / Juncus balticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	2	Distichlis spicata	4
Haplopappus lanceolatus	1	Hordeum jubatum	3
Juncus balticus	2	Poa juncifolia	2
Puccinellia airoides	5	Suaeda depressa	1

Ending Station 445 **Community Type:** Alopecurus arundinaceus / Juncus balticus

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	5	Distichlis spicata	2
Hordeum jubatum	3	Juncus balticus	2
Poa juncifolia	2	Puccinellia airoides	2
Sonchus arvensis	1		

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Selkirk

Planting Type	#Planted	#Alive	Notes
Pacific Willow (bare root)	200		
Plains Cottonwood (bare root)	100		
Planeleaf Willow (bare root)	400		
Red-osier Dogwood (10 cu in)	392		
Red-osier Dogwood (bare root)	950		
Sanbar Willow (cuttings)	1908		*See Comments
Sandbar Willow (bare root)	400		
Yellow Willow (bare root)	400		

Comments

2007: There are 24 woody species pods within the entire site and a total of 4,750 stems; each pod was planted with 100, 364 or 500 stems to meet the 500 stem ct/acre criteria. Each plant was not counted during the investigation. For survivorship estimates, each pod was observed and survivorship estimated based on viability of the stem. In most cases the stems were without leaves because of the first-year planting stress. Survivorship for the first planting season appeared to be approximately 60%.
2008: As of July 2008, approximately 1-5% of the planted woody stems had leaves. Oasis (2008) found that 50% of the stems were green during the two 2008 site visits and thus leaf growth and/or new growth may occur in 2009. Any mortality that has occurred does not appear to be animal-caused as most of the screening around each plant seems to be in place, unless rodents are chewing the stems, which was not obvious to the author. Mortality of some stems may have resulted from the high water table around the root zones. A willow area in the south east corner of the wetland was not counted in the planted pod count (24) or assessed during the leafy-stem estimate; this will pod was approximately 100% cover. It is possible that a later leaf-out occurred due to colder than normal temperatures in May/June.
2009: At least 50% of the pods had no live woody plants, one had approximately 20% stems with live leaves, three had <1%, one had 1-5%, one had 5-10%, the remaining pods were not observed. A total of approximately 150 live planted woody species have survived 2 years.
2010: Similar survivorship was observed in 2010 as in 2009. Live woody plants were absent in over 50% of the pods. The remaining pods exhibited low survival rates, averaging between 5-15% green, leafed-out stems. It is estimated that roughly 10% of the total number of stems originally planted are surviving.
2011: A very low number of woody species pods exhibited any willow survival. All pods were investigated in 2011. Only five of the pods supported any live willows. Four of the five pods showed less than 5% survival. One pod, just east of the center open water cell, displayed approximately 20% survival. Sandbar willow was the dominant surviving. A very low number of yellow willow and planeleaf willow were surviving alongside of the sandbar willow. Low survival may possibly be factor of the extensive areas and extended periods of inundation present throughout the Selkirk site.

Selkirk

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: 8-BBB, 4-WDB

How many? 12

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Coot	2	F, L	MA, OW
Black-billed Magpie	6	L	WM
Bobolink	8	FO, L	WM
Canada Goose	36	FO	OW, WM
Franklin's Gull	6	FO, L	MA, OW, WM
Green-winged Teal	2	F, FO	MA, OW
Marsh Wren	1	N	MA, OW, WM
Mourning Dove	4	FO, L	WM
Pine Siskin	3	FO	UP, WM
Red-tailed Hawk	2	F, FO	WM
Red-winged Blackbird	50	F, L, N	MA, WM
Sandhill Crane	6	FO, N	MA, OW, WM
Snow Goose	12	FO	MA, OW, WM
Song Sparrow	2	FO, L	UP, WM
Tree Swallow	6	F, FO	SS, WM
Western Meadowlark	5	F, FO, L	MA, WM
Yellow-headed Blackbird	2	F, L	MA

Bird Comments

BEHAVIOR CODES

BP = One of a breeding pair **BD** = Breeding display **F** = Foraging **FO** = Flyover **L** = Loafing **N** = Nesting

HABITAT CODES

AB = Aquatic bed **SS** = Scrub/Shrub **FO** = Forested **UP** = Upland buffer **I** = Island

WM = Wet meadow **MA** = Marsh **US** = Unconsolidated shore **MF** = Mud Flat **OW** = Open Water

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Common Gartersnake	1	No	No	No	
Deer Mouse	1	No	No	Yes	
Muskrat		No	No	Yes	
Raccoon		Yes	No	No	
Striped Skunk	1	No	No	No	
White-tailed Deer	3	Yes	No	No	

Wildlife Comments:

Selkirk

PHOTOGRAPHS

Take photographs of the following permanent reference points listed in the check list below. Record the direction of the photograph using a compass. When at the site for the first time, establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3 feet above ground. Survey the location with a resource grade GPS and mark the location on the aerial photograph.

Photograph Checklist:

☑ One photograph for each of the four cardinal directions surrounding the wetland.

☑ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.

☑ At least one photograph showing the buffer surrounding the wetland.

☑ One photograph from each end of the vegetation transect, showing the transect.

Photo #	Latitude	Longitude	Bearing	Description
8277			45	T-1, end
8278			0	T-1, end
8279			135	T-1, end
8280			180	T-1, end
8281	46.470959	-110.224113	270	T-1, start
8282			180	T-1, start
8283			135	T-1, start
8284			0	T-1, start
8292	46.469322	-110.224403	90	PP-5
8297	46.469872	-110.225883	90	S-1
8298	46.471153	-110.227562	0	PP-4
8299			45	PP-4
8300			135	PP-4
8301			210	PP-4
8302			180	PP-3
8303			90	PP-3
8308			20	S-2
8309	46.474861	-110.224144	30	S-3
8310			90	S-4
8312	46.47348	-110.224709	0	PP-1
8313			270	PP-1
8314			180	PP-1
8315	46.473454	-110.226166	0	PP-2
8316			270	PP-2

Comments:

Selkirk

ADDITIONAL ITEMS CHECKLIST

Hydrology

☑ Map emergent vegetation/open water boundary on aerial photos.
☑ Observe extent of surface water. Look for evidence of past surface water elevations (e.g. drift lines, vegetation staining, erosion, etc).

Photos

☑ One photo from the wetland toward each of the four cardinal directions
☑ One photo showing upland use surrounding the wetland.
☑ One photo showing the buffer around the wetland
☑ One photo from each end of each vegetation transect, toward the transect

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

☑ Delineate wetlands according to applicable USACE protocol (1987 form or Supplement)
☑ Delineate wetland – upland boundary onto aerial photograph.

Wetland Delineation Comments

The northeast corner of the site exhibited an area of expanded wetland and has been attributed to the extensive areas of inundation present on this mitigation site.

Functional Assessments

☑ Complete and attach full MDT Montana Wetland Assessment Method field forms.

Functional Assessment Comments:

Maintenance

Were man-made nesting structure installed at this site? Yes

If yes, do they need to be repaired? No

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

Were man-made structures built or installed to impound water or control water flow

into or out of the wetland? Yes

If yes, are the structures in need of repair? No

If yes, describe the problems below.

All berms, outflow pipes, in good working order, no maintenance needs identified. The tilted duck box should be reset to promote nesting use.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Selkirk Wetland Mitigation Reserve | City/County: Wheatland | Sampling Date: 7/28/2011

Applicant/Owner: MDT | State: MT | Sampling Point: S-1

Investigator(s): B. Sandefur | Section, Township, Range: S 9 T 8N R 12E

Landform (hillslope, terrace, etc.): Valley bottom | Local relief (concave, convex, none): flat | Slope (%):

Subregion (LRR): MLRA 22A | Lat: 46.4699283333333 | Long: -110.225686666667 | Datum:

Soil Map Unit Name: Nesda-Meadowcreek-Fluvaquentic haplaquolls complex

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑	No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks:
Point within vegetation community 1 at a slightly higher elevation than remaining community.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Alopecurus arundinaceus	80	☑	NI
2. Hordeum jubatum	10	☐	FAC+
3. Agropyron trachycaulum	15	☐	FAC
4. Iva axillaris	10	☐	FAC
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	115 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Although the only dominant species is listed as NI, additional plant species within plot consist of FAC species and community is considered to be hydrophytic.

SOIL

Sampling Point: S-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	95	10YR 4/4	5	C	M	Silt Loam	
6-13	10YR 6/2	95	10YR 4/6	5	C	PL	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☑ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Fluvaquentic haplaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 10

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Selkirk Wetland Mitigation Reserve | City/County: Wheatland | Sampling Date: 7/28/2011

Applicant/Owner: MDT | State: MT | Sampling Point: S-2

Investigator(s): B. Sandefur | Section, Township, Range: S 9 T 8N R 12E

Landform (hillslope, terrace, etc.): Valley bottom | Local relief (concave, convex, none): flat | Slope (%): 0

Subregion (LRR): MLRA 22A | Lat: 46.4699283333333 | Long: -110.225686666667 | Datum:

Soil Map Unit Name: Shambo loam

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑	No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks:
Point within vegetation community 2.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Alopecurus arundinaceus	85	☑	NI
2. Juncus balticus	20	☑	OBL
3. Carex nebrascensis	5	☐	OBL
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	110 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Although the only dominant species is listed as NI, additional plant species within plot consist of OBL species and community is considered to be hydrophytic.

SOIL

Sampling Point: S-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	95	10YR 3/4	5	C	M	Clay Loam	
5-14	10YR 6/2	85	10YR 4/6	15	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: frigid Typic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☑ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present?	Yes ☑ No ☐	Depth (inches):	1
Water Table Present?	Yes ☑ No ☐	Depth (inches):	1
Saturation Present? (includes capillary fringe)	Yes ☑ No ☐	Depth (inches):	0

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Selkirk Wetland Mitigation Reserve City/County: Wheatland Sampling Date: 7/28/2011

Applicant/Owner: MDT State: MT Sampling Point: S-3

Investigator(s): B. Sandefur Section, Township, Range: S 9 T 8N R 12E

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): flat Slope (%): 0

Subregion (LRR): MLRA 22A Lat: 46.4748866666667 Long: -110.224115 Datum:

Soil Map Unit Name: Shambo loam

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑	No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks:
Point located near boundary of mitigation limits. Area mapped as upland in 2010.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Alopecurus arundinaceus	100	☑	NI
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Plot considered to be a hydrophytic community based on professional judgement and additional field observations of soils and existing hydrology.

SOIL

Sampling Point: S-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	95	10YR 4/4	5	C	M	Clay Loam	
5-14	10YR 6/2	90	7.5YR 4/4	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: frigid Typic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☑ No ☐ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Soils saturated to surface.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Selkirk Wetland Mitigation Reserve City/County: Wheatland Sampling Date: 7/28/2011

Applicant/Owner: MDT State: MT Sampling Point: S-4

Investigator(s): B. Sandefur Section, Township, Range: S 9 T 8N R 12E

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): flat Slope (%): 0

Subregion (LRR): MLRA 22A Lat: 46.4748866666667 Long: -110.224115 Datum:

Soil Map Unit Name: Shambo loam

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐	No ☑	
Wetland Hydrology Present?	Yes ☐	No ☑	

Remarks:
Data point located along the northeastern boundary of the project area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. Bromus inermis	80	☑	NO
2. Cirsium arvense	10	☐	FACU+
3. Dactylis glomerata	5	☐	FACU
4. Taraxacum officinale	5	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: S-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	100					Clay Loam	
3-10	10YR 4/2	100					Clay Loam	
10-15	10YR 5/2	95	10YR 2/2	5	D	M	Silty Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☐ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: frigid Typic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:

Soils hydric below 10 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: Data point located on upland rise, soil moist at 12 inch. No hydro indicators at surface.

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

1. Project name Selkirk Wetland Mitigation Site **2. MDT project#** NH-STPP-TPX 54(31) **Control#**

3. Evaluation Date 7/28/2011 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** Creation

6. Wetland Location(s): T 8N **R** 12E **Sec1** N1/2NE1/ **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10040201 **Watershed/County** Musselshell Watershed/Wheatland County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 38.26

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 38.26

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Slope	Palustrine	none	Emergent Wetland	Impounded	saturated	90
Depressional	Palustrine	none	Emergent Wetland	Impounded	intermittantly flooded	5
Depressional	Palustrine	none	Emergent Wetland	Impounded	Permanently flooded	5

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Common

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

Conditions within AA	*Predominant conditions adjacent to (within 500 feet of) AA*		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is < =15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is <=30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is <=15%.	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is <=30%.	moderate disturbance	moderate disturbance	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc)

Areas impacted from construction of lateral grade checks 100% revegetated. Wetland area expanded along the northeastern boundary of mitigation site due to prolonged wetland hydrology through site. Hydrology supplied from both natural and irrigation runoff.

ii. Prominent noxious, aquatic nuisance, other exotic species:

Low amounts of Cirsium arvense

iii. Brief descriptive summary of surrounding land use/habitat

Hayland production & grazing, Hwy 12 along SW boundary

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

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments: Low amounts of woody species present but yet to attain shrub size status. Structure classes present include emergent and submergent within standing water.

SECTION PERTAINING TO FUNCTION VALUES ASSESSMENT

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

i. AA is documented (D) or suspected (S) to contain (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ○ **D** ○ **S**

Secondary habitat (list Species) ○ **D** ○ **S**

Incidental habitat (list species) ○ **D** ○ **S**

No usable habitat ◉ **S**

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating)

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

Sources for documented use USFWS database for County, no documented or suspected use by listed species.

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

i. AA is documented (D) or suspected (S) to contain (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ○ **D** ○ **S**

Secondary habitat (list Species) ◉ **D** ○ **S** Long-billed Curlew (S3B), White-faced Ibis (S3B), Bobolink (S3

Incidental habitat (list species) ○ **D** ○ **S**

No usable habitat ○ **S**

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

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MTNHP, Species observed onsite by landowners.

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Substantial

Substantial (based on any of the following [check]):

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

Minimal (based on any of the following [check]):

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

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

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

ii. Wildlife habitat features (Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

Structural diversity (see #13)	High								Moderate								Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating)

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

Comments Numerous birds and other wildlife observed throughout monitoring efforts and documented by landowner.

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

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

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

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

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

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

Comments

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

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

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** ◯ **N** ◉

Comments: The meandering swales and lateral grade checks established in this credit area have the potential to collect water and flood into the created wetland. Most of the created wetland was inundataed with at least very shallow water (0-1 inch) during the July site visit.

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, check ☐ **NA** here and proceed to 14G.)

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: Several inches of water were present in the NW corner of the upslope side of the lateral grade checks and excavated area and the meandering swales.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive 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** here and proceed to 14H.)

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

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments: Outlet restricted by berm on south side of wetland edge and water flowing from swales is culverted beneath south berm.

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

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: Water in depressions appear to be perennial and subject to wave action.

14I. Production Export/Food Chain Support:

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

A	Vegetated component >5 acres						Vegetated component 1-5 acres						Vegetated component <1 acre					
B	High		Moderate		Low		High		Moderate		Low		High		Moderate		Low	
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & ii below)

i. Discharge Indicators

- ☐ The AA is a slope wetland
- ☑ Springs or seeps 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
- ☐ Shallow water table and the site is saturated to the surface
- ☐ Other:

ii. Recharge Indicators

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

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

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments: Wetland receives groundwater from slope to north and east and it is likely that water flows through the soil layers toward the Mussellshell River.

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments:

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

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

iii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** ○ Y ○ **N** (If yes, go to i then proceed to iv; if no, then rate as [circle] Low [0.1])

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

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Final Rating: **1 H**

Comments: Site used for wildlife viewing and bird-watching.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) Creation

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0	1	0
B. MT Natural Heritage Program Species Habitat	M	.7	1	26.782
C. General Wildlife Habitat	E	1	1	38.26
D. General Fish Habitat	NA	0	0	0
E. Flood Attenuation	M	.6	1	22.956
F. Short and Long Term Surface Water Storage	H	1	1	38.26
G. Sediment/Nutrient/Toxicant Removal	H	1	1	38.26
H. Sediment/Shoreline Stabilization	H	1	1	38.26
I. Production Export/Food Chain Support	H	.9	1	34.434
J. Groundwater Discharge/Recharge	H	1	1	38.26
K. Uniqueness	M	.4	1	15.304
L. Recreation/Education Potential	H	1	1	38.26
Totals:		8.6	11	329.036
Percent of Possible Score		**78.18** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; if not satisfied, go to Category IV)
- ☐ Score of 1 functional point for Species Rated S1,S2, or S3 by the MT Natural Heritage Program; **or**
- ☑ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☑ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

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

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

1. Project name Selkirk Wetland Mitigation Site **2. MDT project#** NH-STPP-TPX 54(31) **Control#**

3. Evaluation Date 7/28/2011 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** Enhancement

6. Wetland Location(s): T 8N **R** 12E **Sec1** N1/2NE1/ **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10040201 **Watershed/County** Musselshell Watershed/Wheatland County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 1

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 1

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Palustrine	none	Emergent Wetland	Impounded	Permanently flooded	20
Depressional	Palustrine	none	Emergent Wetland	Impounded	saturated	60
Depressional	Palustrine	none	Scrub-Shrub Wetland	Impounded	saturated	10
Riverine	Riverine	none	Unconsolidated Bottom		Permanently flooded	10

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Common

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

Conditions within AA	*Predominant conditions adjacent to (within 500 feet of) AA*		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is < =15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is <=30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is <=15%.	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is <=30%.	moderate disturbance	moderate disturbance	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc)

AA is adjacent to HWY 12, mostly cattails and grass species. Outflow of all reserve site occurs within this credit area.

ii. Prominent noxious, aquatic nuisance, other exotic species:

Cirsium arvense, low amounts

iii. Brief descriptive summary of surrounding land use/habitat

AA located is southern corner of site. Hayland production & grazing to east, Hwy 12 along SW boundary, re-establishment and creation AA to west, and rehabilitation AA to north.

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

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments: Emergent and small amount of scrub/shrub.

SECTION PERTAINING TO FUNCTION VALUES ASSESSMENT

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

i. AA is documented (D) or suspected (S) to contain (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ◎ **D** ◎ **S**

Secondary habitat (list Species) ◎ **D** ◎ **S**

Incidental habitat (list species) ◎ **D** ◎ **S**

No usable habitat ◉ **S**

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating)

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

Sources for documented use USFWS database for County, no documented or suspected use by listed species.

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

i. AA is documented (D) or suspected (S) to contain (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ◎ **D** ◎ **S**

Secondary habitat (list Species) ◉ **D** ○ **S** White-faced Ibis (S3B), Bobolink (S3B)

Incidental habitat (list species) ◎ **D** ◎ **S**

No usable habitat ◎ **S**

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

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MTNHP, landowner observed.

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Substantial

Substantial (based on any of the following [check]):

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

Minimal (based on any of the following [check]):

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

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

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

ii. Wildlife habitat features (Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

Structural diversity (see #13)	High								Moderate								Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating)

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

Comments AA wildlife rating based on the numerous birds and wildlife track observed.

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

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

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

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

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

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

Comments

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

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

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** ◯ **N** ◉

Comments: Outlet from wetlands to the north of the berm flow through this wetland area and a channel has formed,

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, check ☐ **NA** here and proceed to 14G.)

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: Water appears to flow from site year-round.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive 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** here and proceed to 14H.)

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

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments: Wetland has potential to receive sediment/nutrients from surrounding ag lands, area well-vegetated.

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

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: Deep-rooted species dominate perennial outflow channel

14I. Production Export/Food Chain Support:

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

A	Vegetated component >5 acres						Vegetated component 1-5 acres						Vegetated component <1 acre					
B	High		Moderate		Low		High		Moderate		Low		High		Moderate		Low	
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & ii below)

i. Discharge Indicators

- ☐ The AA is a slope wetland
- ☑ Springs or seeps 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
- ☐ Shallow water table and the site is saturated to the surface
- ☐ Other:

ii. Recharge Indicators

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

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

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments: HWY 12 forms a berm at the toe of the wetland, likely water seeps under road in addition to flowing through the culvert.

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments:

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

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

iii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** ○ Y ○ **N** (If yes, go to i then proceed to iv; if no, then rate as [circle] Low [0.1])

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

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Final Rating:

1 H

Comments: Site used for wildlife viewing and bird-watching.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) Enhancement

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0	1	0
B. MT Natural Heritage Program Species Habitat	M	.7	1	0.7
C. General Wildlife Habitat	E	1	1	1
D. General Fish Habitat	NA	0	0	0
E. Flood Attenuation	L	.2	1	0.2
F. Short and Long Term Surface Water Storage	M	.4	1	0.4
G. Sediment/Nutrient/Toxicant Removal	H	1	1	1
H. Sediment/Shoreline Stabilization	H	1	1	1
I. Production Export/Food Chain Support	H	.8	1	0.8
J. Groundwater Discharge/Recharge	H	1	1	1
K. Uniqueness	M	.4	1	0.4
L. Recreation/Education Potential	H	1	1	1
Totals:		7.5	11	7.5
Percent of Possible Score		**68.18** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; if not satisfied, go to Category IV)
- ☐ Score of 1 functional point for Species Rated S1,S2, or S3 by the MT Natural Heritage Program; **or**
- ☑ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☑ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

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

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

1. Project name Selkirk Wetland Mitigation Site **2. MDT project#** NH-STPP-TPX 54(31) **Control#**

3. Evaluation Date 7/28/2011 **4. Evaluators** B. Sandefur **5. Wetland/Site# (s)** Rehabilitation

6. Wetland Location(s): T 8N **R** 12E **Sec1** N1/2NE1/4 Sec 8 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 10040201 **Watershed/County** Musselshell Watershed/Wheatland County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 31.99

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 31.99

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Slope	Palustrine	none	Emergent Wetland	Impounded	Permanently flooded	90
Depressional	Palustrine		Aquatic Bed	Impounded	Permanently flooded	10

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Common

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

Conditions within AA	*Predominant conditions adjacent to (within 500 feet of) AA*		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is < =15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is <=30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is <=15%.	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is <=30%.	moderate disturbance	moderate disturbance	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	high disturbance	high disturbance	high disturbance

Comments: (types of disturbance, intensity, season, etc)

AA includes 3 ponds, 2 swales, and the confluence of the 3 reserve swales. Mostly emergent vegetation with numerous shrub seedlings planted supporting low survival.

ii. Prominent noxious, aquatic nuisance, other exotic species:

Cirsium arvense, in low amounts

iii. Brief descriptive summary of surrounding land use/habitat

Hayland production & grazing, Hwy 12 along SW boundary

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

# of "Cowardin" vegetated classes present in AA (see #10)	> 3 vegetated classes (or > 2 if one is forested)	2 vegetated classes (or 1 if forested)	< 1 vegetated class
Rating (circle)	H	M	L

Comments: Numerous woody species planted in the area in 2007, low survival observed during monitoring in 2010 and none of size to classify as shrubs. Few dead cottonwoods in south end of area. Two structure classes include emergent and submergent.

SECTION PERTAINING TO FUNCTION VALUES ASSESSMENT

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

i. AA is documented (D) or suspected (S) to contain (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ○ **D** ○ **S**

Secondary habitat (list Species) ○ **D** ○ **S**

Incidental habitat (list species) ○ **D** ○ **S**

No usable habitat ◉ **S**

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating)

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

Sources for documented use USFWS database for County, no documented or suspected use by listed species.

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

i. AA is documented (D) or suspected (S) to contain (circle one basedon definition contained in instructions):

Primary or critical habitat (list species) ○ **D** ○ **S**

Secondary habitat (list Species) ◉ **D** ○ **S** Long-billed Curlew (S3B), White-faced Ibis (S3B), Bobolink (S3

Incidental habitat (list species) ○ **D** ○ **S**

No usable habitat ○ **S**

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

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MTNHP, Species observed onsite by landowners.

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA

Substantial (based on any of the following [check]):

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

Minimal (based on any of the following [check]):

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

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

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

ii. Wildlife habitat features (Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

Structural diversity (see #13)	High								Moderate								Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating)

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

Comments Previous surveys and current field observations indicate this site is important habitat for several avian species.

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

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

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

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

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

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

Comments

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

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

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10>2 acres			≤ 2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains not outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** ◯ **N** ◉

Comments:

The meandering swales established in this credit area have the potential to collect water and flood into the wetlands. Most of this credit area had 0-1 inch of surface water during the monitoring, and ponds/swales had 1-20 inches of water.

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, check ☐ **NA** here and proceed to 14G.)

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

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet			1.1 to 5 acre feet			≤1 acre foot		
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments:

This credit area is saturated to the surface for apparently most of the year.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive 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** here and proceed to 14H.)

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

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments:

Meandering, low-gradient swales saturated/inundated during assessment

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

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: Deep-rooted vegetation present along shallow ponds and swale

14I. Production Export/Food Chain Support:

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

A	Vegetated component >5 acres						Vegetated component 1-5 acres						Vegetated component <1 acre					
B	High		Moderate		Low		High		Moderate		Low		High		Moderate		Low	
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & ii below)

i. Discharge Indicators

- ☐ The AA is a slope wetland
- ☑ Springs or seeps 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
- ☐ Shallow water table and the site is saturated to the surface
- ☐ Other:

ii. Recharge Indicators

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

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

Criteria	*Functional Points and Rating*
AA is known Discharge/Recharge area or one or more indicators of D/R present	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments: Wetland receives groundwater from slope to north and east and it is likely that water flows through the soil layers toward the Mussellshell River.

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L	.1L

Comments:

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

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

iii. **Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use?** ○ Y ○ **N** (If yes, go to i then proceed to iv; if no, then rate as [circle] Low [0.1])

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

Ownership	*Disturbance at AA (#12i)*		
	Low	Moderate	High
Public ownership	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Final Rating:

1 H

Comments: Site used for wildlife viewing and bird-watching.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S) Rehabilitation

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	L	0	1	0
B. MT Natural Heritage Program Species Habitat	M	.7	1	22.393
C. General Wildlife Habitat	E	1	1	31.99
D. General Fish Habitat	NA	0	0	0
E. Flood Attenuation	M	.6	1	19.194
F. Short and Long Term Surface Water Storage	H	1	1	31.99
G. Sediment/Nutrient/Toxicant Removal	H	1	1	31.99
H. Sediment/Shoreline Stabilization	H	1	1	31.99
I. Production Export/Food Chain Support	H	.9	1	28.791
J. Groundwater Discharge/Recharge	H	1	1	31.99
K. Uniqueness	M	.4	1	12.796
L. Recreation/Education Potential	H	1	1	31.99
Totals:		8.6	11	275.114
Percent of Possible Score		**78.18** %		

Category I Wetland: (Must satisfy **one** of the following criteria; if does not meet criteria, go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; if not satisfied, go to Category IV)
- ☐ Score of 1 functional point for Species Rated S1,S2, or S3 by the MT Natural Heritage Program; **or**
- ☑ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☑ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ "Low" rating for Production Export/Food Chain Support; **and**
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

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

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Selkirk Wetland Mitigation Reserve
Wheatland County, Montana

Photo Point 1 – *Photo 1*
Bearing: North

Location: North pond, Rehab credit
Taken in 2009

Photo Point 1 – *Photo 2*
Bearing: West

Location: North pond, Rehab credit
Taken in 2009

Photo Point 1 – *Photo 1*
Bearing: North

Location: North pond, Rehab credit
Taken in 2010

Photo Point 1 – *Photo 2*
Bearing: West

Location: North pond, Rehab credit
Taken in 2010

Photo Point 1 – *Photo 1*
Bearing: North

Location: North pond, Rehab credit
Taken in 2011

Photo Point 1 – *Photo 2*
Bearing: West

Location: North pond, Rehab credit
Taken in 2011

Photo Point 1 – *Photo 3*
Bearing: South

Location: North pond, Rehab credit
Taken in 2009

Photo Point 2 – *Photo 1*
Bearing: North

Location: Creation Credit
Taken in 2009

Photo Point 1 – *Photo 3*
Bearing: South

Location: North pond, Rehab credit
Taken in 2010

Photo Point 2 – *Photo 1*
Bearing: North

Location: Creation Credit
Taken in 2010

Photo Point 1 – *Photo 3*
Bearing: South

Location: North pond, Rehab credit
Taken in 2011

Photo Point 2 – *Photo 1*
Bearing: North

Location: Creation Credit
Taken in 2011

Photo Point 2 – *Photo 2*
Bearing: West

Location: Creation Credit
Taken in 2009

Photo Point 3 – *Photo 1*
Bearing: South

Location: Creation Credit
Taken in 2009

Photo Point 2 – *Photo 2*
Bearing: West

Location: Creation Credit
Taken in 2010

Photo Point 3 – *Photo 1*
Bearing: South

Location: Creation Credit
Taken in 2010

Photo Point 2 – *Photo 2*
Bearing: West

Location: Creation Credit
Taken in 2011

Photo Point 3 – *Photo 1*
Bearing: South

Location: Creation Credit
Taken in 2011

Photo Point 3 – *Photo 2*
Bearing: East
Location: Creation Credit
Taken in 2009

Photo Point 4 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2009

Photo Point 3 – *Photo 2*
Bearing: East
Location: Creation Credit
Taken in 2010

Photo Point 4 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2010

Photo Point 3 – *Photo 2*
Bearing: East
Location: Creation Credit
Taken in 2011

Photo Point 4 – *Photo 1*
Bearing: North
Location: Creation Credit
Taken in 2011

Photo Point 4 – *Photo 2*
Bearing: Northeast
Location: Creation Credit
Taken in 2009

Photo Point 4 – *Photo 3*
Bearing: Southeast
Location: Creation Credit
Taken in 2009

Photo Point 4 – *Photo 2*
Bearing: Northeast
Location: Creation Credit
Taken in 2010

Photo Point 4 – *Photo 3*
Bearing: Southeast
Location: Creation Credit
Taken in 2010

Photo Point 4 – *Photo 2*
Bearing: Northeast
Location: Creation Credit
Taken in 2011

Photo Point 4 – *Photo 3*
Bearing: Southeast
Location: Creation Credit
Taken in 2011

Photo Point 4 – *Photo 4*
Bearing: Southwest

Location: Creation Credit
Taken in 2009

Photo Point 4 – *Photo 4*
Bearing: Southwest

Location: Creation Credit
Taken in 2010

Photo Point 4 – *Photo 4*
Bearing: Southwest

Location: Creation Credit
Taken in 2011

Photo Point 5 – *Photo 1*
Compass Bearing: East

Location: Creation Credit
Taken in 2010

Photo Point 5 – *Photo 1*
Compass Bearing: East

Location: Creation Credit
Taken in 2011

Photo Point 5 – *Photo 2*
Compass Bearing: South

Location: Creation Credit
Taken in 2010

Photo Point 5 – *Photo 2*
Compass Bearing: South

Location: Creation Credit
Taken in 2010

Photo Point 5 – *Photo 3*
Compass Bearing: West

Location: Creation Credit
Taken in 2010

Photo Point 5 – *Photo 3*
Compass Bearing: West

Location: Creation Credit
Taken in 2011

Photo Point – *T-1 Start*
Bearing: West

Location: Rehabilitation credit area
Taken in 2009

Photo Point – *T-1 Start*
Bearing: West

Location: Rehabilitation credit area
Taken in 2010

Photo Point – *T-1 Start*
Bearing: West

Location: Rehabilitation credit area
Taken in 2011

Photo Point – *T-1 Start*
Bearing: South

Location: Rehabilitation credit area
Taken in 2009

Photo Point – *T-1 Start*
Bearing: Southeast

Location: Rehabilitation credit area
Taken in 2009

Photo Point – *T-1 Start*
Bearing: South

Location: Rehabilitation credit area
Taken in 2010

Photo Point – *T-1 Start*
Bearing: Southeast

Location: Rehabilitation credit area
Taken in 2010

Photo Point – *T-1 Start*
Bearing: South

Location: Rehabilitation credit area
Taken in 2011

Photo Point – *T-1 Start*
Bearing: Southeast

Location: Rehabilitation credit area
Taken in 2011

Photo Point – *T-1 Start*
Bearing: North

Location: Rehabilitation credit area
Taken in 2009

Photo Point – *T-1 Finish*
Bearing: Northeast

Location: Creation Credit
Taken in 2009

Photo Point – *T-1 Start*
Bearing: North

Location: Rehabilitation credit area
Taken in 2010

Photo Point – *T-1 Finish*
Bearing: Northeast

Location: Creation Credit
Taken in 2010

Photo Point – *T-1 Start*
Bearing: North

Location: Rehabilitation credit area
Taken in 2011

Photo Point – *T-1 Finish*
Bearing: Northeast

Location: Creation Credit
Taken in 2011

Photo Point – *T-1 Finish*
Bearing: North

Location: Creation Credit
Taken in 2009

Photo Point – *T-1 Finish*
Bearing: Southeast

Location: Creation Credit
Taken in 2009

Photo Point – *T-1 Finish*
Bearing: North

Location: Creation Credit
Taken in 2010

Photo Point – *T-1 Finish*
Bearing: Southeast

Location: Creation Credit
Taken in 2010

Photo Point – *T-1 Finish*
Bearing: North

Location: Creation Credit
Taken in 2011

Photo Point – *T-1 Finish*
Bearing: Southeast

Location: Creation Credit
Taken in 2011

Photo Point – *T-1 Finish*
Bearing: South

Location: Creation Credit
Taken in 2009

Photo Point – *T-1 Finish*
Bearing: South

Location: Creation Credit
Taken in 2010

Photo Point – *T-1 Finish*
Bearing: South

Location: Creation Credit
Taken in 2011

S – 1
Compass Bearing:

Location: Veg Com 1
Taken in 2011

S – 2
Compass Bearing:

Location: Veg Com 2
Taken in 2011

S – 3
Compass Bearing:

Location: Veg Com 2
Taken in 2011

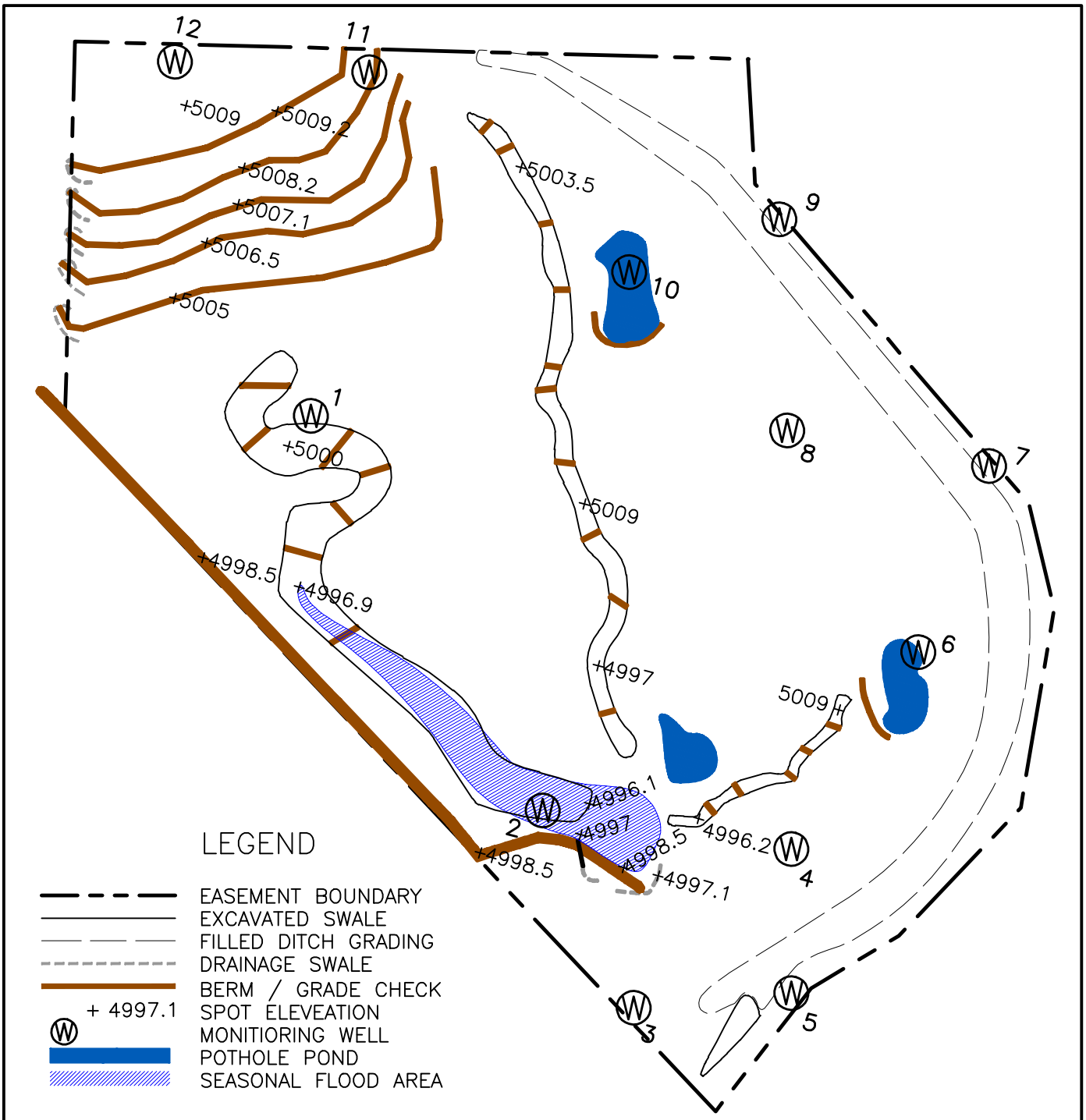
S – 4
Compass Bearing: 90 deg

Location: Veg Com 5
Taken in 2011

Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring
Selkirk Wetland Mitigation Reserve
Wheatland County, Montana



NOTE:
MONITORING WELL #10 REMOVED DURING CONSTRUCTION

oasis ENVIRONMENTAL

DATE: 05/01/07
CHKD: J.R.
DRAWN: bz
PROJ. No.: 321-001

PO Box 582 Livingston, MT 59047 (406) 222 7600

AS BUILT SITE PLAN

SELKIRK MITIGATION
D-1 TWO DOT, MT

FIGURE
1

PATH: 321-001/cad files/as built.dwg