MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2015

McGinnis Meadows
Lincoln 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 2015

MONTANA DEPARTMENT OF TRANSPORTATION

WETLAND MITIGATION MONITORING REPORT:

YEAR 2015

McGinnis Meadows
Lincoln County, Montana
Constructed: 2009

MDT Project Number STPX-NH 27(17)
Control Number 4143

MFWP: SPA MDT-R1-81-2008
USACE: NWO-2008-03130 MTH

Prepared for:

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

Prepared by:

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

December 2015

CCI Project No: MDT.006

"MDT attempts to provide accommodations for any known disability that may interfere with a person participating in any service, program, or activity of the Department of Transportation. Alternative accessible formats of this information will be provided upon request. For further information, call 406-444-7228, TTY at 800-335-7592, or Montana Relay at 711."

TABLE OF CONTENTS

1. INTRODUCTION....1

2. METHODS....4

2.1. Hydrology....4
2.2. Stream Channel Survey....5
2.3. Vegetation....5
2.4. Soil....6
2.5. Wetland Delineation....6
2.6. Wildlife....7
2.7. Functional Assessment....7
2.8. Photo Documentation....7
2.9. GPS Data....7
2.10. Maintenance Needs....8

3. RESULTS....8

3.1. Hydrology....8
3.2. McGinnis Creek Channel....9
3.3. Vegetation....14
3.4. Soil....24
3.5. Wetland Delineation....25
3.6. Wildlife....25
3.7. Functional Assessment....27
3.8. Photo Documentation....31
3.9. Maintenance Needs....31
3.10. Current Credit Summary....31

4. REFERENCES....37

TABLES

Table 1. Groundwater depths measured in Wells 1, 2, and 3 from 2010 to 2015. 9
Table 2. Comprehensive list of plant species identified at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015. 15
Table 3. Data summary for transect T-1 from 2010 to 2015 at the McGinnis Meadows Wetland Mitigation Site. 21
Table 4. Data summary for transect T-2 from 2010 to 2015 at the McGinnis Meadows Wetland Mitigation Site. 22
Table 5. Total wetland and stream habitat acres delineated from 2010 to 2015 at the McGinnis Meadows Wetland Mitigation Site. 25
Table 6. Wildlife species observed at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015. 26
Table 7. Functions and Values at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015. 29
Table 8. Summary of Wetland Credits at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2012. 33
Table 9. Summary of Wetland Credits at the McGinnis Meadows Wetland Mitigation Site from 2013 to 2015. 34
Table 10. Summary of success criteria and site performance. 36

CHARTS

Chart 1. McGinnis Creek stream cross-section one. 11
Chart 2. McGinnis Creek stream cross-section two. 12
Chart 3. McGinnis Creek stream cross-section three. 13
Chart 4. Transect map showing community types on transect T-1 from 2010 to 2015 from start (0 feet) to finish (504 feet). 21
Chart 5. Length of habitat types within transect T-1 from 2010 to 2015. 22
Chart 6. Transect map showing community types on transect T-2 from 2010 to 2015 from start (0 feet) to finish (1000 feet). 23
Chart 7. Length of habitat types within transect T-2 from 2010 to 2015. 23

FIGURES

Figure 1. Project location of McGinnis Meadows Wetland Mitigation Site. 2
Figure 2. Monitoring Activity Locations……..…....Appendix A
Figure 3. Mapped Site Features……..….. Appendix A
Figure 4. Wetland Credit Areas……..…Appendix A

APPENDICES

Appendix A Project Area Maps – Figures 2, 3, and 4

Appendix B 2015 MDT Wetland Mitigation Site Monitoring Form
2015 USACE Wetland Determination Data Forms
2015 MDT Montana Wetland Assessment Forms

Appendix C Project Area Photographs

Appendix D Project Plan Sheet

Cover Photo: Reed canarygrass-dominated wet meadow within McGinnis Meadows.

1. INTRODUCTION

The McGinnis Meadows 2015 Wetland Mitigation Monitoring Report presents the results of the sixth year of post-construction monitoring at the McGinnis Meadows Mitigation Site. This Montana Department of Transportation (MDT) wetland mitigation project is located in Section 33, Township 26 North, Range 28 West, Lincoln County, Montana (Figure 1). The project lies within the boundaries of Watershed 1 - Kootenai River Basin. McGinnis Meadows is located approximately seven miles south of the US Highway 2 corridor on two parcels that encompass 33 acres of an historic hay field and pasture (Figure 2, Appendix A). McGinnis Creek, a tributary to the Fisher River, bisects the parcels. Figures 2 and 3 (Appendix A) show the Monitoring Activity Locations and Mapped Site Features, respectively. Figure 4 delineates the 2015 Wetland Credit Areas. The MDT Mitigation Site Monitoring Form, US Army Corps of Engineers (USACE) Wetland Determination Data Forms (USACE 2010), and the 2008 MDT Montana Wetland Assessment Method (MWAM) forms (Berglund and McEldowney 2008) are included in Appendix B. Representative photographs are included in Appendix C and the Project Plan Sheet is included in Appendix D.

Wetlands developed at this location provide compensatory mitigation for wetland impacts associated with transportation projects in the Missoula District. The McGinnis Meadows site was selected after an extensive search of potential wetland and stream restoration sites by MDT within the Kootenai River Watershed in cooperation with a consortium of Conservation Districts known as Montana Watersheds Incorporated (MWI). The consortium consisted of the Lincoln, Sanders, and Flathead County Conservation Districts with technical assistance from the US Department of Agriculture (USDA), and Natural Resources Conservation Service (NRCS) centers in Bozeman, Kalispell, Libby, and Eureka. The wetland and stream restoration project was developed to improve the flood storage, stream length, and fisheries habitat of McGinnis Creek, and to enhance the overall wildlife, riparian, and wetland habitats impacted by past agricultural practices within the McGinnis Creek watershed.

Project goals are the restoration/re-establishment of approximately 0.8 acres of riparian habitat and 17.3 acres of degraded wetlands, creation of 2.9 acres of emergent wetlands, enhancement of 1.74 acres of existing emergent wetland and an intermittent drainage, preservation of 0.3 acres of existing riparian communities along McGinnis Creek, and protection of 2.2 acres of upland buffer. Section 3.9 of this report presents the project credit ratios approved by the USACE under Permit Number NWO-2008-03130-MTH. The MDT also seeks to obtain approximately 8,835 stream credits for the restoration of 2,850 linear feet of McGinnis Creek. The approved performance standards (MDT 2009) are listed below.

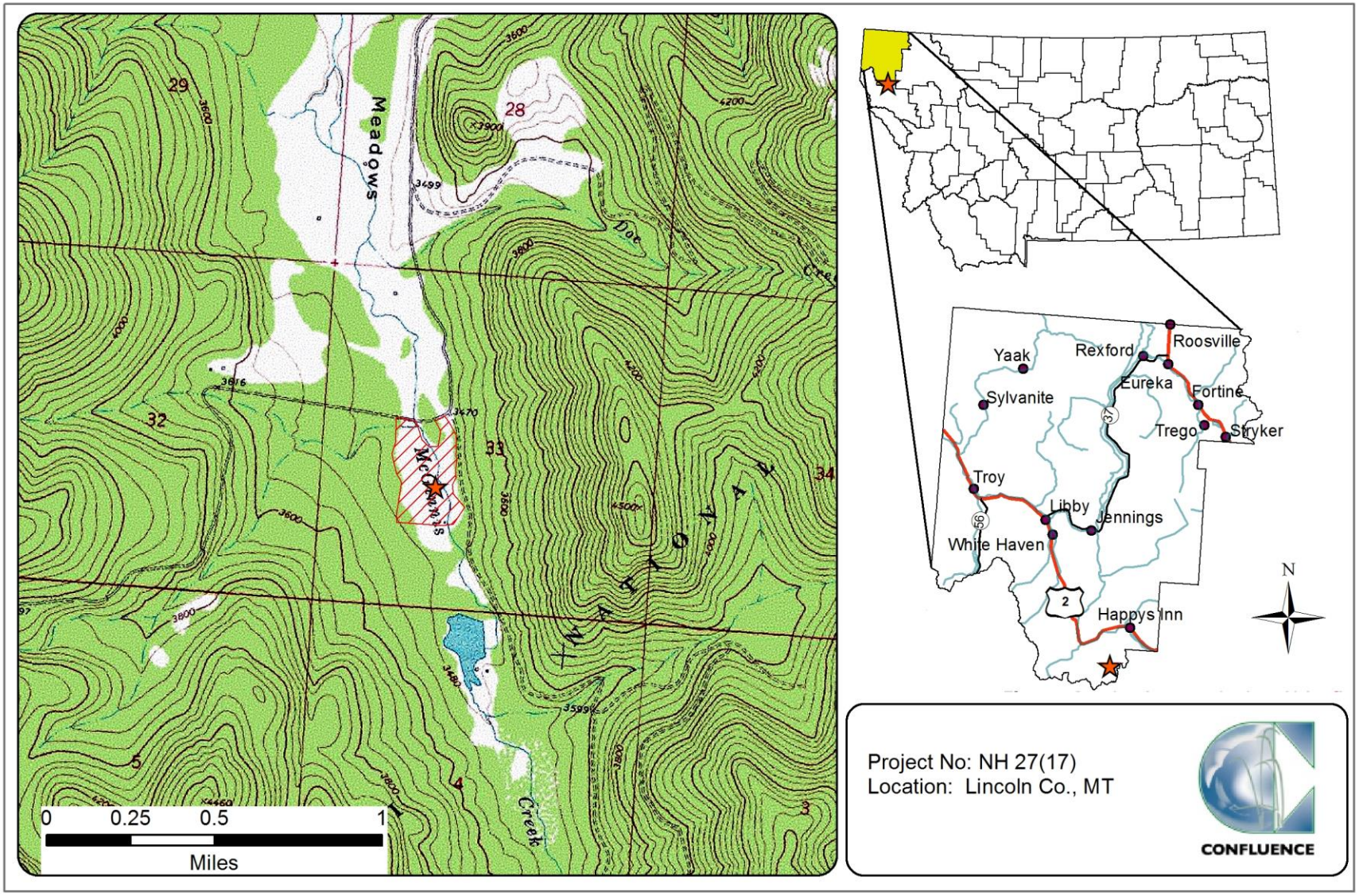


Figure 1. Project location of McGinnis Meadows Wetland Mitigation Site.

1. **Wetland Characteristics**: All restored, created, enhanced, and preserved wetlands within the project limits will meet the three parameter criteria for hydrology, vegetation, and soils established for determining wetland areas as outlined in the *1987 Corps of Engineers Wetlands Delineation Manual for the Determination of Wetlands* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0*)* (USACE 2010).
    a) **Wetland Hydrology Success** will be achieved where wetland hydrology is present as per the technical guidelines in the 1987 USACE wetland manual and 2010 regional supplement. Soil saturation will be present for at least 12.5 percent of the growing season.
    b) **Hydric Soil Success** will be achieved where hydric soil conditions are present (per the most recent NRCS definitions for hydric soil) or appear to be forming, the soil is sufficiently stable to prevent erosion, and the soil is able to support plant cover. Soil profile development will be documented during the course of the monitoring period to determine if wetland areas are exhibiting characteristics of hydric soils per current guidance. Since typical hydric soil indicators may require long periods to form, a lack of distinctive hydric soil features will not be considered a failure if hydrologic and vegetation success are achieved.
    c) **Hydrophytic Vegetation Success** will be achieved where aerial cover of facultative or wetter species is greater than or equal to 70 percent and Montana State-listed noxious weeds do not exceed 5 percent cover.

    The following concept of "dominance", as defined in the 1987 USACE manual, will be applied during future routine wetland determinations in created/restored wetlands: "*Subjectively determine the dominant species by estimating those having the largest relative basal area (woody overstory), greatest height (woody understory), greatest percentage of aerial cover (herbaceous understory), and/or greatest number of stems (woody vines).*"
        i. Woody Plants – Plantings will be considered successful where they exceed 50 percent survival after five years. The natural colonization of woody plant species from nearby sources is anticipated once the grazing, haying, and construction activities are removed from the site. The rate and extent of natural woody plant colonization will be dependent on factors such as habitat availability, beaver activity, seed sources, and other natural selection factors.

2. **Open Water:** It is the intent of the project to provide open water during the spring and early summer within excavated depressions. Open water will be considered successful and creditable.

3. **McGinnis Creek Channel Restoration Success** will be evaluated in terms of revegetation success.
    a) Revegetation along the new McGinnis Creek channel corridor will be considered successful when banks are vegetated with a majority of deep-rooting riparian and wetland plant species.
    b) The intent of the stream restoration is to allow the stream to migrate naturally within the floodplain and to give it enough room to move and stabilize itself within the site.

4. **Upland Buffer Success** will be achieved when the noxious weeds do not exceed 5 percent of cover within the buffer areas on site. Any area within the creditable buffer zone disturbed by project construction must have at least 50 percent aerial cover of non-weed species by the end of the monitoring period.

5. **Weed Control** will be based upon annual monitoring of the site to determine weed species and degree of infestation within the site. Control measures, based upon the monitoring results, will be implemented by MDT to minimize and/or eliminate the intrusion of State Listed Noxious weed species within the site. The MDT is currently managing the property to control relic weed problems prior to the initiation of wetland construction activities within the site.

6. **Fencing** of the proposed mitigation site has been installed around the perimeter of the site to protect the integrity of the wetland from disturbance. Fencing installed along the perimeter of the site was designed to be “wildlife friendly” to allow for wildlife movement into and out of the wetland complex.

2. METHODS

The sixth monitoring event was completed on July 21, 2015. Information collected during the field investigation was recorded on the Mitigation Monitoring Form and Wetland Determination Data Form (Appendix B). Monitoring activity locations were located with a global positioning system (GPS) (Figure 2, Appendix A). Information collected during the site visit included a wetland delineation, vegetation community mapping, vegetation transect monitoring, soil and hydrology data, stream channel cross-sectional surveys, 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 12.5 percent or more during the growing season) (Environmental Laboratory 1987).” Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are classified as wetlands. The growing season for wetlands is defined

as the number of days where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28.5 degrees Fahrenheit (Environmental Laboratory 1987). The growing season recorded for the meteorological station at Libby 32 SSE, Montana (245020), located approximately 20 miles northwest of the project site, extends from June 13 to September 1 for a total of 81 days (NRCS 2010). Areas defined as wetlands would require 10 contiguous days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria and performance standards.

Hydrologic indicators as outlined on the Wetland Determination Data Form were documented at two data points established within the project area. Groundwater levels were measured in three monitoring wells using a retractable tape measurer. The well locations are shown on Figure 2 (Appendix A).

2.2. Stream Channel Survey

Three baseline stream cross-sections were surveyed in 2010 at permanent locations marked with bank pins to assess bank stability and lateral migration throughout the monitoring period. The cross-section locations are shown on Figure 2 (Appendix A). The stream cross-sections were resurveyed in 2011 through 2015. The results of the three cross-section surveys over the five monitoring years are presented on Charts 1 through 3. Photographs of the cross-sections from 2010 to 2015 are shown on pages C-17 through C-28 of Appendix C.

2.3. Vegetation

The boundaries of dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2015 aerial photograph (Figure 3, Appendix A). The community types listed on the Mitigation Monitoring Form and Figure 3 were named for the top one and/or two most prevalent species according to percent cover. The percent cover of dominant species within a community type was estimated and recorded on the monitoring form using the following ranges: 0 (less than 1 percent), 1 (1 to 5 percent), 2 (6 to 10 percent), 3 (11 to 20 percent), 4 (21 to 50 percent), and 5 (greater than 50 percent) (Appendix B).

Temporal changes in vegetation are evaluated through annual assessments of static belt transects established in summer 2010 (Figure 2, Appendix A). Vegetation composition was assessed and recorded along two vegetation belt transects approximately 10 feet wide and 504 feet (T-1) and 1000 feet long (T-2) (Figure 2, Appendix A). The transect locations were recorded with a resource grade GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent aerial cover of each vegetation species within the belt transect was estimated using the same cover ranges listed for the community data (Appendix B). Photographs were taken at the endpoints of each transect during the monitoring event (Appendix C).

The Montana Noxious Weed List (July 2015), prepared by the Montana Department of Agriculture, was used to categorize weeds identified within the site. The locations of noxious weed infestations were noted in the field and mapped on the 2015 aerial photograph (Figure 3, Appendix A). The noxious weed species identified are color-coded and marked by 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. The letters T, L, M, or H on Figure 3 represent cover classes of less than 1 percent, 1 to 5 percent, 6 to 25 percent, and 26 to 100 percent, respectively (Appendix A). Site monitoring included an evaluation of the condition of woody species planted onsite. Woody species survival is assessed annually.

2.4. Soil

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

2.5. Wetland Delineation

Waters of the US including jurisdictional wetlands and special aquatic sites were delineated throughout the project area in accordance with criteria established in the 1987 USACE Manual and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010). In order to delineate a representative area as wetland, the technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology, as described in the 1987 USACE Manual, must be satisfied. The name and indicator status of plant species were derived from the 2014 National Wetland Plant List (NWPL) (Lichvar *et al*. 2014). The Routine Level-2 On-site Determination Method (Environmental Laboratory 1987) was used to delineate jurisdictional areas within the project boundaries. Two wetland data points (Figure 2 in Appendix A) were evaluated in 2015 to help define the wetland/upland boundaries. The information was recorded on the Wetland Determination Data Form (Appendix B).

The wetland boundaries were 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 the 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. When 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. mud flat. In the case of constructed mitigation wetlands, hydric soils do not

have to be present based on the timeframe required for soil development. The wetland boundaries were GPS-surveyed and identified on the 2015 aerial photography. Wetland areas reported were determined using GIS methods.

2.6. Wildlife

Observations of mammal, reptile, amphibian, and bird use within the project area were recorded on the wetland monitoring form during the site visit. Indirect use indicators including tracks, scat, burrow, eggshells, skins, and bones were also recorded. These signs were recorded incidental to other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive list of animal species observed from 2010 to 2015 was compiled for this report.

2.7. Functional Assessment

The 2008 MDT MWAM was used to evaluate functions and values on the site from 2010 to 2015. This method provides an objective means of assigning wetlands an overall rating and provides regulators 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 and McEldowney 2008).

An MDT MWAM form was completed for each of four Assessment Areas (AAs) within the McGinnis Meadows mitigation site. AAs include: Creation (excavated cells in the southeast quadrant of the project area plus any wetland that is created outside of the restoration, enhancement and preservation credit areas), Restoration (re-establishment and rehabilitation area), Enhancement (existing emergent wetland), and Preservation (existing riverine wetlands).

2.8. Photo Documentation

Monitoring at photo points provided supplemental information documenting wetland and upland conditions, site trends, current land uses surrounding the site, and vegetation transect conditions. Photographs were taken at established photo points throughout the mitigation site during the 2015 site visit (Appendix C). Photo point locations were recorded with a resource grade GPS unit and are shown on Figure 2 of Appendix A.

2.9. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit and a Trimble GeoHX GPS unit during the 2015 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, imported into GIS, and presented in Montana State Plane Single Zone NAD 83 meters. Site features and survey points that were located with a GPS included wetland boundaries, fence boundaries, photograph points, transect endpoints, and wetland data points.

2.10. Maintenance Needs

Channels, engineered structures, fencing, and other features were examined during the site visit for obvious signs of breaching, damage, or other problems. The examination was cursory and did not constitute an engineering-level structural inspection.

3. RESULTS

3.1. Hydrology

Climate data from the Libby 32 SSE, Montana (245020) weather station recorded an average total annual precipitation rate of 24.44 inches from 1949 to 2013 (WRCC 2014). Annual precipitation for 2010, 2011, 2012, and 2013 was 22.01, 22.64, 27.19, and 16.75 inches, respectively. Average precipitation for the period of record from January to August was 14.94 inches. Precipitation totals recorded from January to August were 11.65 inches (2010), 15.05 inches (2011), 16.2 inches (2012), 10.01 inches (2013) and 15.90 inches (2014). The Libby 32 SSE, Montana (245020) weather station did not record data in 2015. The Polson Kerr Dam, Montana (246640) weather station was used to provide the 2015 precipitation data. Precipitation totals recorded from January to August were 10.61 inches (long-term average) and 6.92 inches (2015). In general, the region surrounding the project area exhibited below-average precipitation prior to and during the growing season in 2010, 2013, and 2015, and above-average precipitation in 2011, 2012, and 2014. Based on field observations of hydrology within the site over the 5-year monitoring period, water levels within the excavated basins appear largely influenced by groundwater and stream discharge with moderate influence from direct precipitation. In 2015 the water levels in the wetland cells were lower than in previous years; in fact several cells were only saturated or moist during the site visit. These lower water levels are attributed to the reduced amount of precipitation this area received in 2015.

The McGinnis Creek watershed is approximately 10.2 square miles in area. The creek bisects the project area. The project site was historically drained, filled, and leveled for agricultural purposes in the early to mid-twentieth century. The McGinnis Creek corridor was channelized during the same timeframe, substantially altering the natural floodplain of the property. Mitigation activities included constructing a more sinuous McGinnis Creek channel. The hydrologic connection between the creek and associated floodplain resulted in an elevated local groundwater table along the drainage. The constructed depressions were excavated to a depth that would intercept the peak seasonal groundwater elevation. Overbank flooding events recharge surface water to the depressions excavated within the floodplain along McGinnis Creek and throughout the mitigation site.

The average depth of surface water in areas of inundation across the site in 2015 was estimated at 1.0 foot with surface water depths ranging from 0.0 to 3.5 feet within the created cells. Approximately 15 percent of the entire site was inundated during the July site investigation, including the aquatic

macrophytes/open water community and McGinnis Creek. The average depth at the emergent vegetation and open water boundary was 1.5 feet.

Groundwater levels were measured in three onsite wells (Table 1 and Figure 2, Appendix A) located within areas that were originally delineated as wetlands in 2005 and 2006. Groundwater elevations in Well 2 are closely linked to annual precipitation rates based on the groundwater level increases measured in 2011, 2012, and 2014, years with above-average precipitation and decreases measured in 2013 and 2015, years with below-average precipitation. Overall, the water levels documented from 2010 to 2015 indicate the site has a fluctuating water table that drops well below one foot of the ground surface during the latter part of the growing season.

Table 1. Groundwater depths measured in Wells 1, 2, and 3 from 2010 to 2015.

	Groundwater Depth (feet bgs)					
Well Number	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Well 1	1.5	0.7	1.9	2.00	2.00	2.40
Well 2	3.3	2.4	2.4	3.24	2.5	3.2
Well 3	3.7	2.8	3.3	4.13	4.6	4.6

Two data points were sampled in 2015 to help define the wetland and upland boundaries (Figure 2, Appendix A and Monitoring Form, Appendix B). Data points SP-1 wet was located in an area that met the wetland criteria. Primary wetland hydrology indicators at SP-1 wet located in wetland Community Type 7 included saturation to ground level and hydrogen sulfide odor. The site also had a positive FAC-neutral test. Data point SP-2 up did not display any primary or secondary indicators of wetland hydrology.

3.2. McGinnis Creek Channel

Surface water flow rates through the McGinnis Meadows wetland mitigation site are dependent upon releases from a reservoir located less than one mile south of the project site. Two, 24-inch equalizing pipes and a lower culvert that serves as a drain through an impoundment, control the flow rates from the reservoir. The base of the new McGinnis Creek channel was constructed at a higher elevation than the incised, abandoned channel to facilitate overbank flow from the creek and to raise groundwater elevations across the site. The fisheries habitat was improved by excavating pools in the outside channel bends. The stream banks of McGinnis Creek were minimally disturbed during construction and are currently vegetated primarily with reed canary grass (*Phalaris arundinacea*). Reed canary grass has a plant stability rating of 9, where 1 is the lowest and 10 is the highest (Winward 2000). The existing vegetation on the banks of the restored channel is expected to provide long-term stability and allow minimal lateral stream migration across the site.

The results of the three cross-sectional surveys collected over the five years of monitoring are presented on Charts 1 through 3. Results of the cross-section

surveys indicate that stream adjustments occurred at the permanent monitoring locations between 2012 and 2013. A slight widening of the channel occurred at each of the three surveyed cross sections in 2013. Undercut banks had been observed at cross sections 2 and 3 in previous years. The stream widening observed in 2013 at cross-sections 2 and 3 is likely the result of partial collapse of these undercut banks. A contributor to the channel widening in these areas was the placement of large trees within the stream. These trees, intended to provide the functions associated with large woody debris, have increased stream velocities and exert a corresponding increase in erosional forces on the immediately adjacent streambanks.

Since 2013, the surveyed cross-sections indicated relatively stable conditions at all three monitoring locations. Movement of the stream bed and banks has been minimal, and is within the resolution of the measurement methodology. Overall, the banks of McGinnis Creek were well vegetated and exhibited minimal, localized erosion only in the upper reach of the project area in 2015.

Photographs of the cross-sections from 2010 to 2015 are shown on pages C-17 through C-28 of Appendix C. The photos illustrate a notable increase in the vegetation cover since construction.

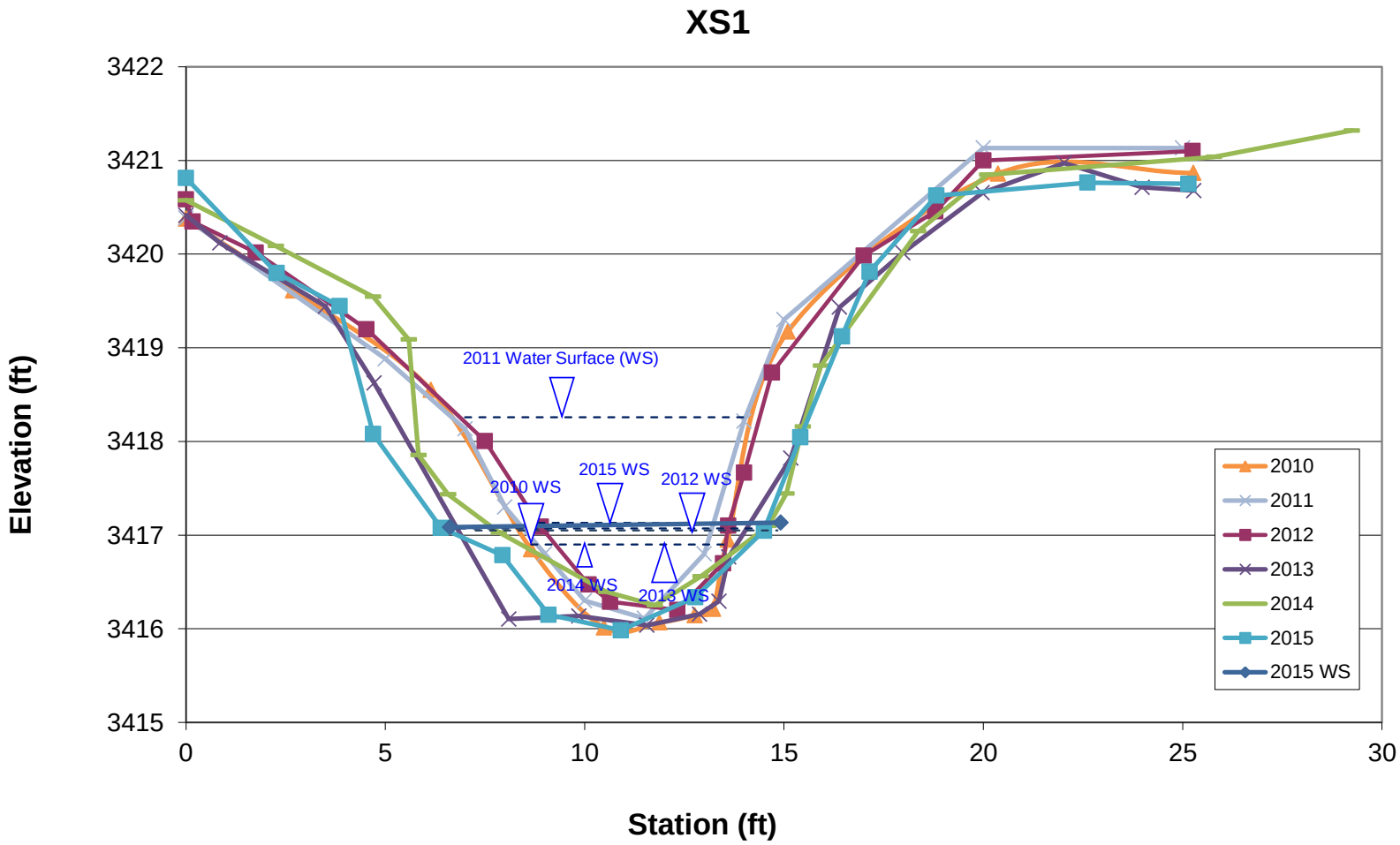


Chart 1. McGinnis Creek stream cross-section one.

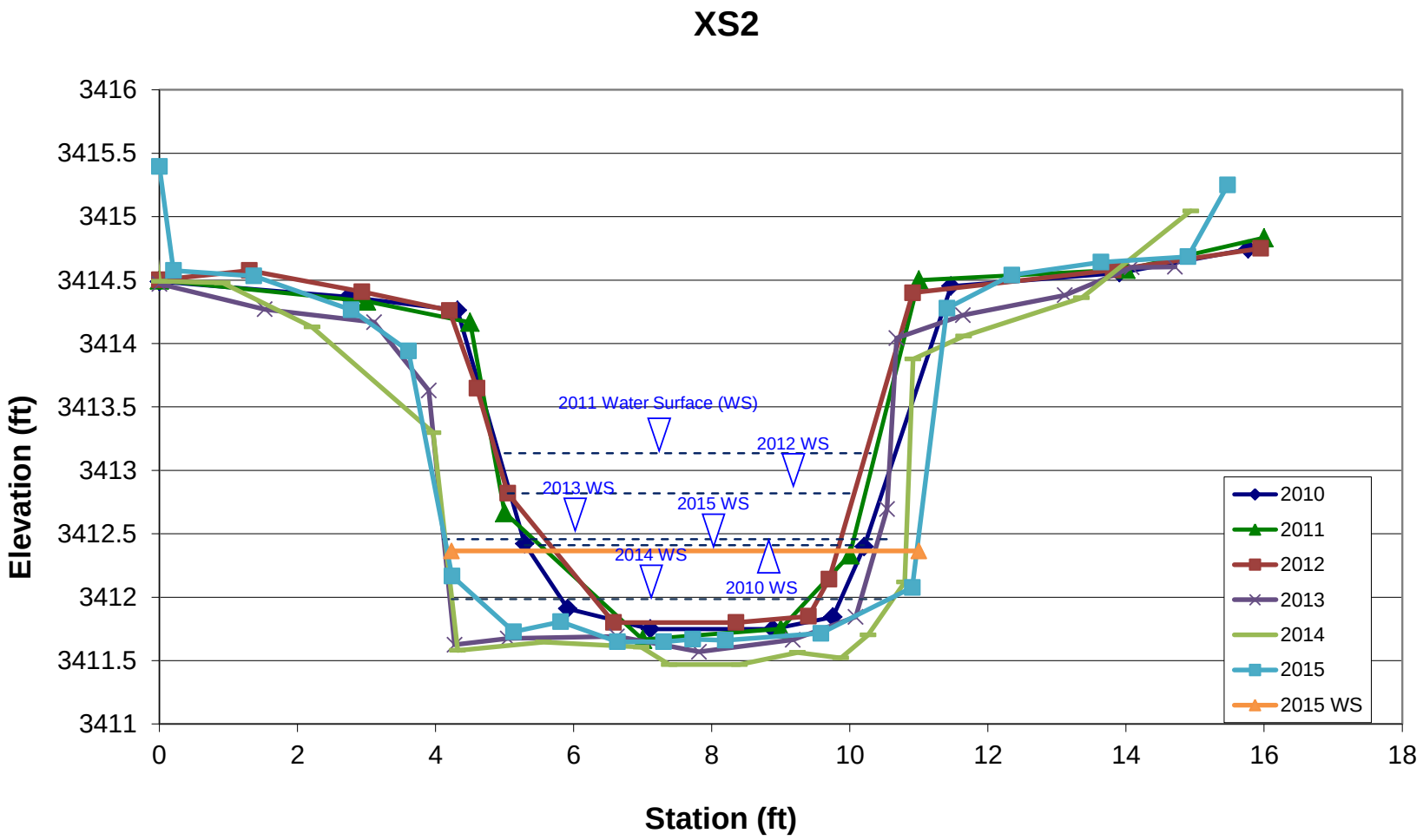


Chart 2. McGinnis Creek stream cross-section two.

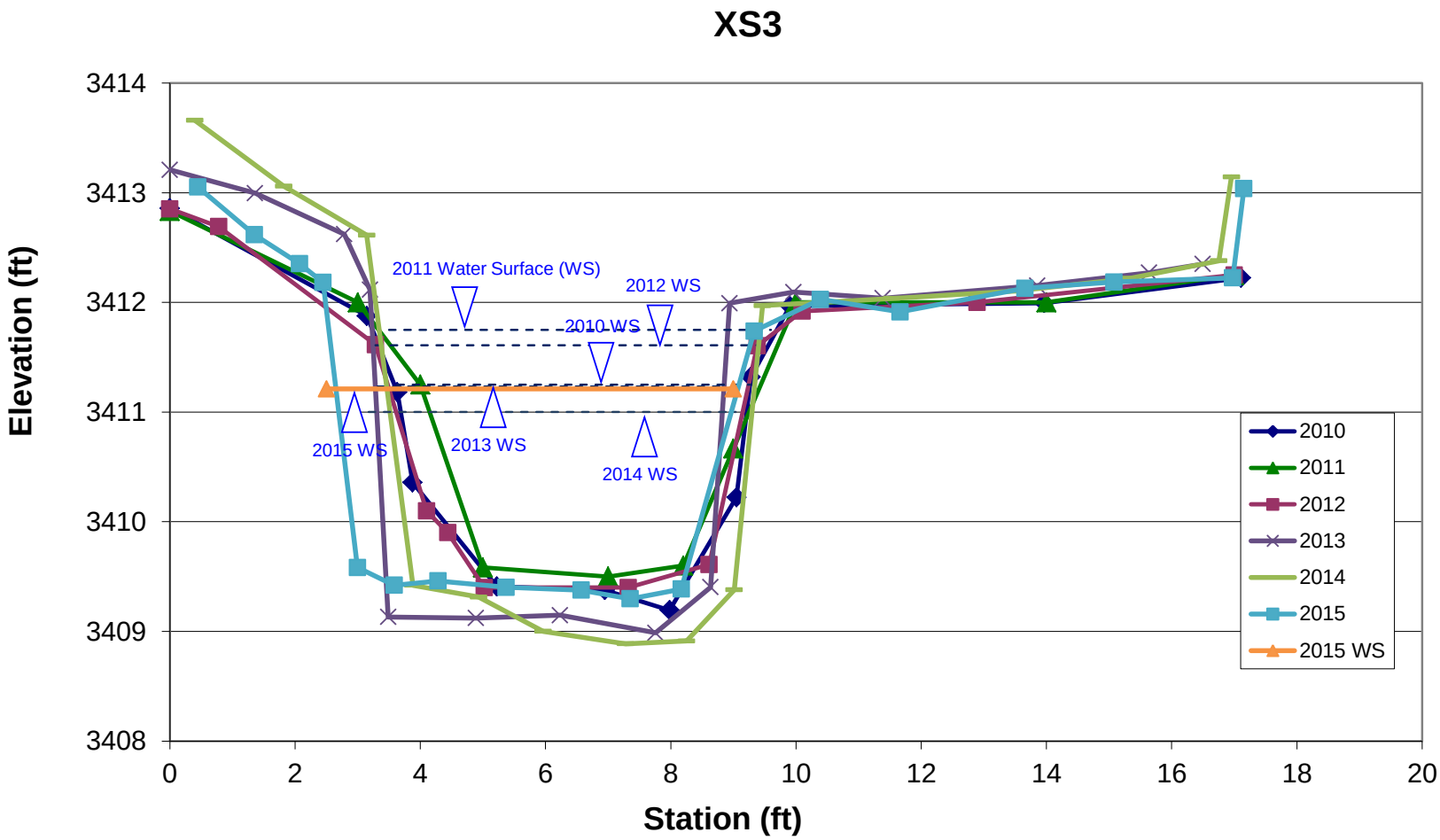


Chart 3. McGinnis Creek stream cross-section three.

3.3. Vegetation

Vegetation communities were mapped and named based on the dominant species within a community and the results of the wetland delineation data. A list of the 156 plant species identified at the McGinnis Meadows wetland mitigation site from 2010 to 2015 is provided in Table 2. The communities and associated species are listed on the Mitigation Monitoring Form in Appendix B and mapped on Figure 3 in Appendix A. The 2015 monitoring event identified twelve vegetation communities including seven wetland types, one open water community, and four upland types (Figure 3, Appendix A). In general, vegetation communities across the majority of the site (95%) have remained stable with just a slight change to a portion of the upland/boundary in an area that displayed increased hydrology and sedge development. Reed canary grass (*Phalaris arundinacea*) appears to becoming dominant in several vegetation communities. McGinnis Meadows vegetation communities are discussed below.

Upland community Type 1 – *Alopecurus pratensis/Phalaris arundinacea* was identified within 2.27 acres in 2015. The frequency and duration of wetland hydrology in portions of the historic upland area resulted in the conversion of portions of this upland community to a new wetland community Type (18) in 2013 and 2014. However, in 2015 the upland community increased by 0.13 acres along the northern boundary most likely due to drier than average conditions in the region. The upland community occurred along the higher elevations adjacent to wetland communities. This upland community was dominated by facultative and facultative wetland species. Field meadow-foxtail (*Alopecurus pratensis*) dominated the community with lesser amounts of reed canary grass and thirteen secondary species present at five percent cover or less (Mitigation Monitoring Form, Appendix B).

Wetland community Type 2 – Aquatic Macrophytes/Open Water has developed on 1.9 acres in the deeper contours of the excavated depressions. The vegetation community has established under persistently inundated growing conditions. Vegetation species within the inundated areas included aquatic macrophytes, green algae, American manna grass (*Glyceria grandis*), reed canary grass, Northwest Territory sedge (*Carex utriculata*), and 16 other species with less than one percent cover each.

Upland Type 4 – *Picea engelmannii/Alopecurus pratensis* represented two small upland forests located on 0.86 acres in the southeast corner of the property that contained a high percent cover of Canada thistle (*Cirsium arvense*). Woody species included Englemann's spruce (*Picea engelmannii*), lodgepole pine *(Pinus contorta*), ponderosa pine (*Pinus ponderosa*) and common snowberry (*Symphoricarpos albus*). Field meadow-foxtail and reed canary grass dominated the understory.

Table 2. Comprehensive list of plant species identified at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015.

Scientific Names	Common Names	WMVC Indicator Status[1]
Abies lasiocarpa	Subalpine Fir	FACU
Achillea millefolium	Common Yarrow	FACU
Agrostis gigantea	Black Bent	FAC
Agrostis scabra	Rough Bent	FAC
Agrostis stolonifera	Spreading Bent	FAC
Algae, brown	Algae, brown	NL
Algae, green	Algae, green	NL
Alnus incana	Speckled Alder	FACW
Alnus viridis	Sitka Alder	FACW
Alopecurus aequalis	Short-Awn Meadow-Foxtail	OBL
Alopecurus pratensis	Field Meadow-Foxtail	FAC
Amelanchier alnifolia	Saskatoon Service-Berry	FACU
Antennaria parvifolia	Nuttall's Pussytoes	NL
Antennaria rosea	Rosy Pussytoes	NL
Apera interrupta	Dense Silky Bentgrass	NL
Arctostaphylos uva-ursi	Red Bearberry	FACU
Argentina anserina	Silverweed cinquefoil	NL
Arnica chamissonis	Leafy Leopardbane	FACW
Aster sp.	Aster	NL
Beckmannia syzigachne	American Slough Grass	OBL
Berberis repens	Creeping Oregon-grape	NL
Bromus carinatus	California Brome	NL
Bromus inermis	Smooth Brome	FAC
Calamagrostis canadensis	Bluejoint	FACW
Calamagrostis rubescens	Pinegrass	NL
Campanula rotundifolia	Bluebell-of-Scotland	FACU
Capsella bursa-pastoris	Shepherd's-Purse	FACU
Cardamine pensylvanica	Quaker Bittercress	FACW
Carex aquatilis	Leafy Tussock Sedge	OBL
Carex athrostachya	Slender-Beak Sedge	FACW
Carex bebbii	Bebb's Sedge	OBL
Carex microptera	Small-Wing Sedge	FACU
Carex nebrascensis	Nebraska Sedge	OBL
Carex pachystachya	Thick-Head Sedge	FAC
Carex petasata	Liddon Sedge	UPL
Carex praticola	Northern Meadow Sedge	FACW
Carex sp.	Sedge	NL

[1] 2014 NWPL (Lichvar *et al* ., 2014)

Species identified for the first time in 2015 are **bolded**.

Table 2 (Continued). Comprehensive list of plant species identified at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015.

Scientific Names	Common Names	WMVC Indicator Status[1]
Carex stipata	Stalk-Grain Sedge	OBL
Carex utriculata	Northwest Territory Sedge	OBL
Carex vesicaria	**Lesser Bladder Sedge**	**OBL**
Centaurea stoebe	Spotted Knapweed	NL
Cerastium fontanum	Common Mouse-Ear Chickweed	FACU
Ceratophyllum demersum	Coon's-Tail	OBL
***Chara* sp.**	**Algae**	**OBL**
Chenopodium album	Lamb's-Quarters	FACU
Cicuta douglasii	Western Water-Hemlock	OBL
Cirsium arvense	Canadian Thistle	FAC
Cirsium vulgare	Bull Thistle	FACU
Comarum palustre	Purple Marshlocks	OBL
Convolvulus arvensis	Field Bindweed	NL
Crataegus douglasii	Black Hawthorn	FAC
Cynoglossum officinale	Gypsy-Flower	FACU
Dactylis glomerata	Orchard Grass	FACU
Deschampsia caespitosa	Tufted Hair Grass	FACW
Descurainia sophia	Herb Sophia	NL
Eleocharis palustris	Common Spike-Rush	OBL
Eleocharis sp.	Spike-Rush	NL
Elymus glaucus	Blue Wild Rye	FACU
Elymus repens	Creeping Wild Rye	FAC
Elymus trachycaulus	Slender Wild Rye	FAC
Epilobium ciliatum	Fringed Willowherb	FACW
Epilobium palustre	Marsh Willowherb	OBL
Equisetum arvense	Field Horsetail	FAC
Equisetum sp.	Horsetail	NL
Erysimum cheiranthoides	Worm-Seed Wallflower	FACU
Fragaria virginiana	Virginia Strawberry	FACU
Galium trifidum	Three-Petal Bedstraw	FACW
Galium triflorum	Fragrant Bedstraw	FACU
Geum macrophyllum	Large-Leaf Avens	FAC
Glyceria borealis	Small Floating Manna Grass	OBL
Glyceria elata	Tall Manna Grass	FACW
Glyceria grandis	American Manna Grass	OBL
Glyceria striata	Fowl Manna Grass	OBL
Gnaphalium palustre	Western Marsh Cudweed	FACW
Heracleum maximum	American Cow-Parsnip	FAC
Heracleum sphondylium	Eltrot	FAC
Hordeum brachyantherum	Meadow Barley	FACW

[1] 2014 NWPL (Lichvar *et al* ., 2014)

Species identified for the first time in 2015 are **bolded**.

Table 2 (Continued). Comprehensive list of plant species identified at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015.

Scientific Names	Common Names	WMVC Indicator Status[1]
Juncus articulatus	Joint-Leaf Rush	OBL
Juncus balticus	Baltic Rush	FACW
Juncus bufonius	Toad Rush	FACW
Juncus confusus	Colorado Rush	FAC
Juncus effusus	Lamp Rush	FACW
Juncus ensifolius	Dagger-Leaf Rush	FACW
Juncus longistylis	Long-Style Rush	FACW
Juncus nevadensis	Sierran Rush	FACW
Juncus nodosus	Knotted Rush	OBL
Juncus tenuis	Lesser Poverty Rush	FAC
Larix occidentalis	Western Larch	FACU
Lemna minor	Common Duckweed	OBL
Linaria vulgaris	Butter-and-eggs	NL
Linum lewisii	Prairie Flax	NL
Maianthemum stellatum	Starry False Solomon's-Seal	FAC
Medicago lupulina	Black Medick	FACU
Mentha arvensis	American Wild Mint	FACW
Mimulus guttatus	Seep Monkey-Flower	OBL
Montia linearis	Linear-Leaf Candy-Flower	FAC
Myosotis stricta	Small-flowered Forget-me-not	NL
Myriophyllum sp.	Water-Milfoil	NL
Packera pseudaurea	Streambank Groundsel	FACW
Penstemon confertus	Yellow Beardtongue	NL
Persicaria amphibia	Water Smartweed	OBL
Phalaris arundinacea	Reed Canary Grass	FACW
Phleum pratense	Common Timothy	FAC
Picea engelmannii	Engelmann's Spruce	FAC
Pinus contorta	Lodgepole Pine	FAC
Pinus ponderosa	Ponderosa Pine	FACU
Plantago major	Great Plantain	FAC
Poa palustris	Fowl Blue Grass	FAC
Poa pratensis	Kentucky Blue Grass	FAC
Poa sp.	Blue Grass	NL
Polygonum douglasii	Douglas' Knotweed	FACU
Populus tremuloides	Quaking Aspen	FACU
Potentilla gracilis	Graceful Cinquefoil	FAC

[1] 2014 NWPL (Lichvar *et al*., 2014)

Species identified for the first time in 2015 are **bolded**.

CONFLUENCE

Table 2 (Continued). Comprehensive list of plant species identified at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015.

Scientific Names	Common Names	WMVC Indicator Status[1]
Potentilla norvegica	Norwegian Cinquefoil	FAC
Potentilla recta	Sulphur Cinquefoil	NL
Potentilla sp.	Cinquefoil	NL
Prunella vulgaris	Common Selfheal	FACU
Pseudotsuga menziesii	Douglas-Fir	FACU
Puccinellia nuttalliana	Nuttall's Alkali Grass	FACW
Ranunculus aquatilis	White Water-Crowfoot	OBL
Rorippa palustris	Bog Yellowcress	OBL
Rosa woodsii	Woods' Rose	FACU
Rubus idaeus	Common Red Raspberry	FACU
Rumex acetosella	Common Sheep Sorrel	FACU
Rumex crispus	Curly Dock	FAC
Salix sp.	Willow	NL
Scirpus microcarpus	Red-Tinge Bulrush	OBL
Scutellaria galericulata	Hooded Skullcap	OBL
Senecio hydrophilus	Alkali-Marsh Ragwort	OBL
Silene menziesii	White Catchfly	FAC
Sisymbrium altissimum	Tall Hedge-Mustard	FACU
Sparganium angustifolium	Narrow-Leaf Burr-Reed	OBL
Sparganium emersum	European Burr-Reed	OBL
Stellaria longifolia	Long-Leaf Starwort	FACW
Symphoricarpos albus	Common Snowberry	FACU
Symphyotrichum laeve	Smooth Blue American-Aster	FACU
Symphyotrichum lanceolatum	White Panicled American-Aster	OBL
Tanacetum vulgare	Common Tansy	FACU
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	UPL
Tragopogon dubius	Meadow Goat's-beard	NL
Trifolium aureum	Yellow Clover	NL
Trifolium hybridum	Alsike Clover	FAC
Trifolium repens	White Clover	FAC
Triglochin maritima	Seaside Arrow-Grass	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Urtica dioica	Stinging Nettle	FAC
Vaccinium caespitosum	Dwarf Blueberry	FAC
Verbascum thapsus	Great Mullein	FACU
Veronica americana	American-Brooklime	OBL
Veronica peregrina	Neckweed	OBL
Veronica scutellata	Grass-Leaf Speedwell	OBL
Veronica serpyllifolia	Thyme-Leaf Speedwell	FAC
Viola adunca	Hook-Spur Violet	FAC
Viola sp.	Violet	NL

[1] 2014 NWPL (Lichvar *et al* ., 2014)

Species identified for the first time in 2015 are **bolded**.

Wetland community Type 5 – *Phalaris arundinacea/Alnus incana* was a 1.64-acre, scrub-shrub, speckled alder (*Alnus incana*) and black hawthorn (*Crataegus douglasii*) community located near the southwest property corner. Reed canary grass dominated the understory. Northwest Territory sedge, American cow-parsnip (*Heracleum maximum*), and Canada thistle (*Cirsium arvense*) were identified within the community. The Canada thistle appeared to have been sprayed in some locations.

Wetland community Type 6 - *Carex utriculata* increased from 0.63 acres in 2014 to 1.4 acres in 2015. This community type consists of an irregularly shaped polygon surrounded by community type 7 in the northwest portion of the site, and in the area east of center of the site. Northwest Territory sedge was the predominant species. Reed canary grass has increased since the 2014 survey. American wild mint (*Mentha arvensis*) was also present within this community at less than 1 percent cover.

Wetland community Type 7 – *Phalaris arundinacea/Carex* spp. dominated 15.9 acres within pre-existing wetlands throughout the site. A detailed investigation of the community in 2012 characterized the entire area as wetland. Reed canary grass and *Carex* spp. dominated the community with less than five percent cover of each of 6 additional species. The name of the community has been updated to reflect the increase of sedge species and the decrease of field meadow-foxtail. Upland community has begun to encroach on the wetland community along the northern edge which resulted in a decrease of 0.9 acres of wetland community Type 7 in 2015.

Wetland Type 11 – *Alnus incana*/*Carex utriculata* was identified on the 0.51-acre former McGinnis channel that traverses the property north to south. Speckled alder, reed canary grass, Northwest Territory sedge, red-tinge bulrush, field meadow-foxtail, and American cow-parsnip dominated the vegetation. The name of the community has been updated to reflect the increase of Northwest Territory sedge and the decrease of reed canary grass.

Upland community Type 14 – *Alopecurus pratensis*/*Pseudotsuga menziesii* was located within 2.16 acres in the southwest corner of the project site. Douglas-fir (*Pseudotsuga menziesii*), lodgepole pine, and western larch (*Larix occidentalis*) dominated the overstory. Woody species present within the understory included common snowberry, speckled alder, and subalpine fir (*Abies lasiocarpa*). Field meadow-foxtail dominated the herbaceous understory combined with six other species present at less than five percent cover.

Upland community Type 16 – *Phalaris arundinacea*/Soil mounds was identified on 0.30 acres that included the mounds created to provide woody species habitat throughout the site. The community contained reed canary grass, Canada thistle, and great mullein (*Verbascum thapsus*). None of the woody species planted in these areas survived, likely a result of herbivory by native ungulates.

Wetland community Type 18 – The *Alopecurus pratensis*/*Carex* spp. was identified for the first time in 2013 to characterize a 0.16-acre area located near the southeast border of the project. The extent of the community increased by 1.17 acres to 1.33 acres in 2014 and remained unchanged in 2015. A wetland plant community has developed in an area previously delineated as upland. The community is dominated by field-meadow foxtail, Bebb's sedge, slender-beak sedge, tufted hair grass, and Colorado rush (*Juncus confusus*).

Wetland community Type 19 – *Carex* spp. characterized 3.75 acres of the excavated depressions that exhibited a slightly drier moisture regime (saturated, not inundated) than the adjacent open water of Community 2. The community was renamed in 2012 from community Type 13 – *Deschampsia caespitosa*/*Glyceria grandis* and again in 2015 from community Type 17 – *Glyceria grandis*/*Carex* spp. to reflect an increase in the prevalence of sedge species and a decrease in the amount of tufted hair grass and American manna grass. Nebraska sedge, Bebb's sedge (*Carex bebbii*), slender-beak sedge (*Carex arthrostachya*), thick-head sedge (*Carex pachystachya*), stalk-grain sedge (*Carex stipata*), Northwest Territory sedge, speckled alder, smooth brome (*Bromus inermis*), Canada thistle, and reed canary grass dominated the diverse community.

Polygon 15 in Figure 3 (Appendix A) represents 0.75 acres of open water identified as waters of the US within the ordinary high water mark (OHWM) of the McGinnis Creek channel.

Table 3 and Charts 4 and 5 summarize the data collected in 2015 for transect T-1. The transect intersects two excavated wetland basins and four communities, including upland Type 4 – *Picea engelmannii*/*Alopecurus pratensis*, wetland Type 2 – Aquatic Macrophytes/Open Water, wetland Type 7 – *Phalaris arundinacea/Carex* spp., and wetland Type 19 – *Carex* spp. The percent cover of sedge species along the transect has increased annually replacing dominant communities of tufted hair grass and American manna grass. Open water along the transect has decreased since 2014. Hydrophytic species dominated 94.0 percent of the transect in 2015. The cover of wetland plants in the constructed depressions continued to increase from 2012 to 2015.

Table 3. Data summary for transect T-1 from 2010 to 2015 at the McGinnis Meadows Wetland Mitigation Site.

Monitoring Year	2010	2011	2012	2013	2014	2015
Transect Length (feet)	**504**	**504**	**504**	**504**	**504**	**504**
Vegetation Community Transitions along Transect	5	7	5	5	5	5
Vegetation Communities along Transect	2	4	4	4	4	4
Hydrophytic Vegetation Communities along Transect	0	3	3	3	3	3
Total Vegetative Species	43	59	41	30	29	29
Total Hydrophytic Species	30	37	30	24	24	23
Total Upland Species	13	22	11	6	5	6
Estimated % Total Vegetative Cover	60	80	95	95	95	95
Estimated % Unvegetated	40	20	5	5	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	0.0	91.9	93.7	93.7	93.7	94.0
% Transect Length Comprising Upland Vegetation Communities	75.4	8.1	6.3	6.3	6.3	6.0
% Transect Length Comprising Unvegetated Open Water	24.6	0.0	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	29.3	0.0	0.0	0.0	0.0	0.0

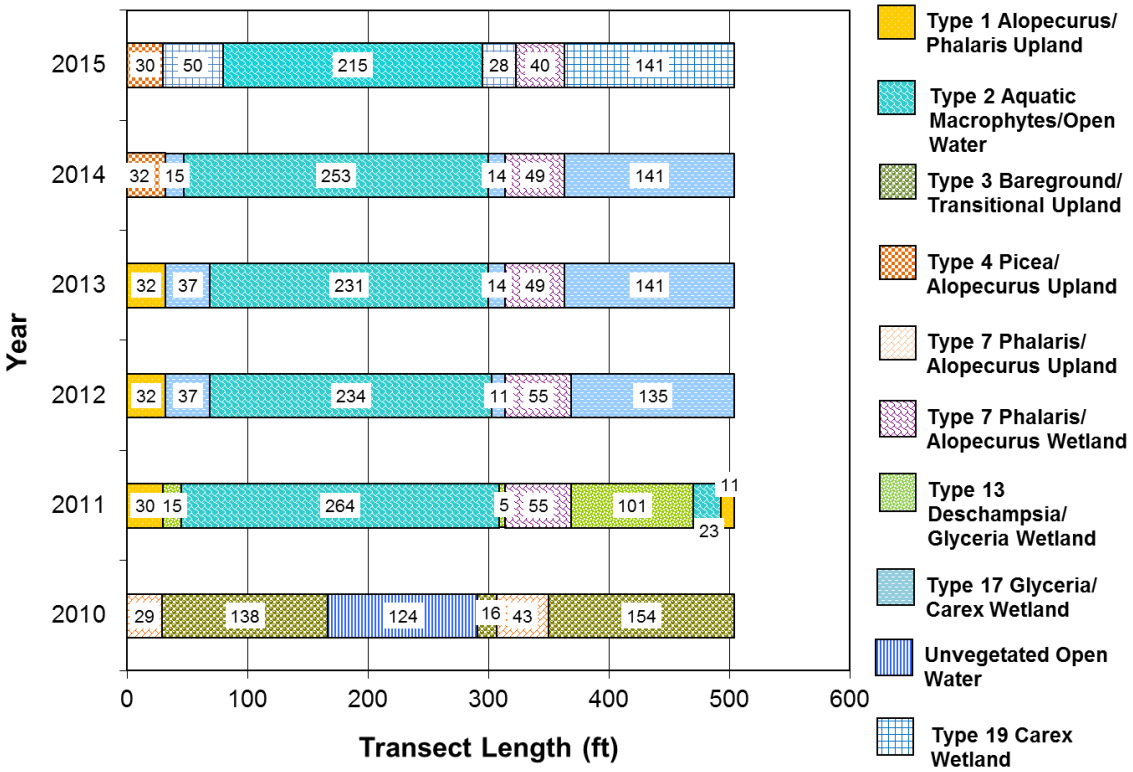


Chart 4. Transect map showing community types on transect T-1 from 2010 to 2015 from start (0 feet) to finish (504 feet).

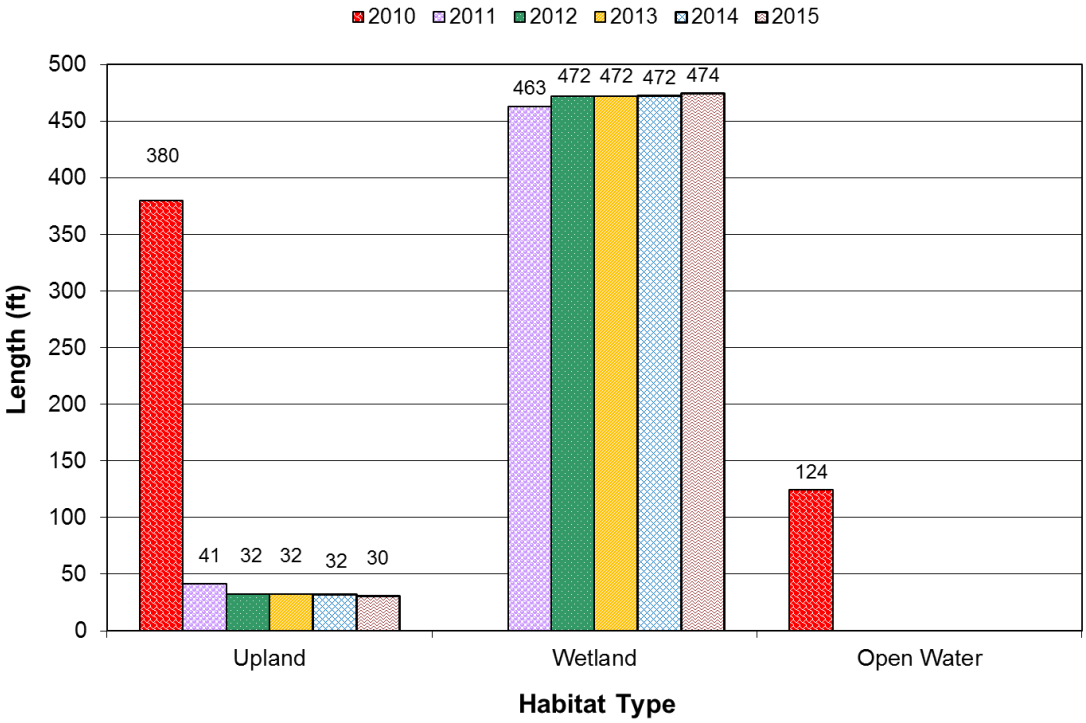


Chart 5. Length of habitat types within transect T-1 from 2010 to 2015.

Transect T-2 extends 1000 feet from the center of the property north to the site boundary. The transect crossed the waters of the US associated with the constructed McGinnis Creek channel and two wetland communities in 2015, Type 7 – *Phalaris arundinacea/Alopecurus pratensis* and Type 19 – *Carex* spp. The seven- and ten-foot intervals of open water shown on Chart 6 represent the McGinnis Creek crossings. Hydrophytic vegetation communities accounted for 98.3 percent of this transect from 2012 to 2015.

Table 4. Data summary for transect T-2 from 2010 to 2015 at the McGinnis Meadows Wetland Mitigation Site.

Monitoring Year	2010	2011	2012	2013	2014	2015
Transect Length (feet)	1000	1000	1000	1000	1000	1000
Vegetation Community Transitions along Transect	14	18	12	12	12	14
Vegetation Communities along Transect	4	5	2	2	3	4
Hydrophytic Vegetation Communities along Transect	3	4	2	2	2	3
Total Vegetative Species	44	49	22	21	20	21
Total Hydrophytic Species	29	38	19	18	17	18
Total Upland Species	15	11	3	3	3	3
Estimated % Total Vegetative Cover	60	80	95	95	95	95
Estimated % Unvegetated	40	20	5	5	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	63.5	91.0	98.3	98.3	98.3	98.3
% Transect Length Comprising Upland Vegetation Communities	34.6	7.8	0.0	0.0	0.0	0.0
% Transect Length Comprising Unvegetated Open Water	1.9	1.2	1.7	1.7	1.7	1.7
% Transect Length Comprising Mudflat	5.0*	0.0	0.0	0.0	0.0	0.0

*Percent Bare Substrate calculated from total length of Type 3 along transect multiplied by bare ground cover in Type 3 community.

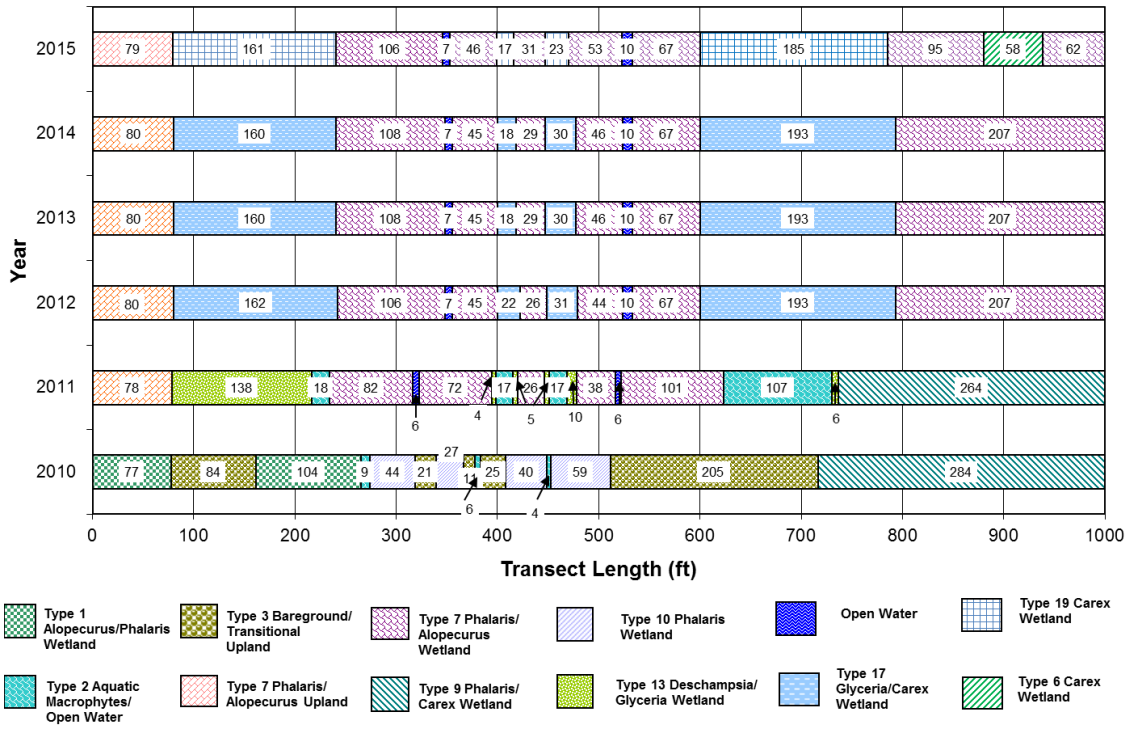


Chart 6. Transect map showing community types on transect T-2 from 2010 to 2015 from start (0 feet) to finish (1000 feet).

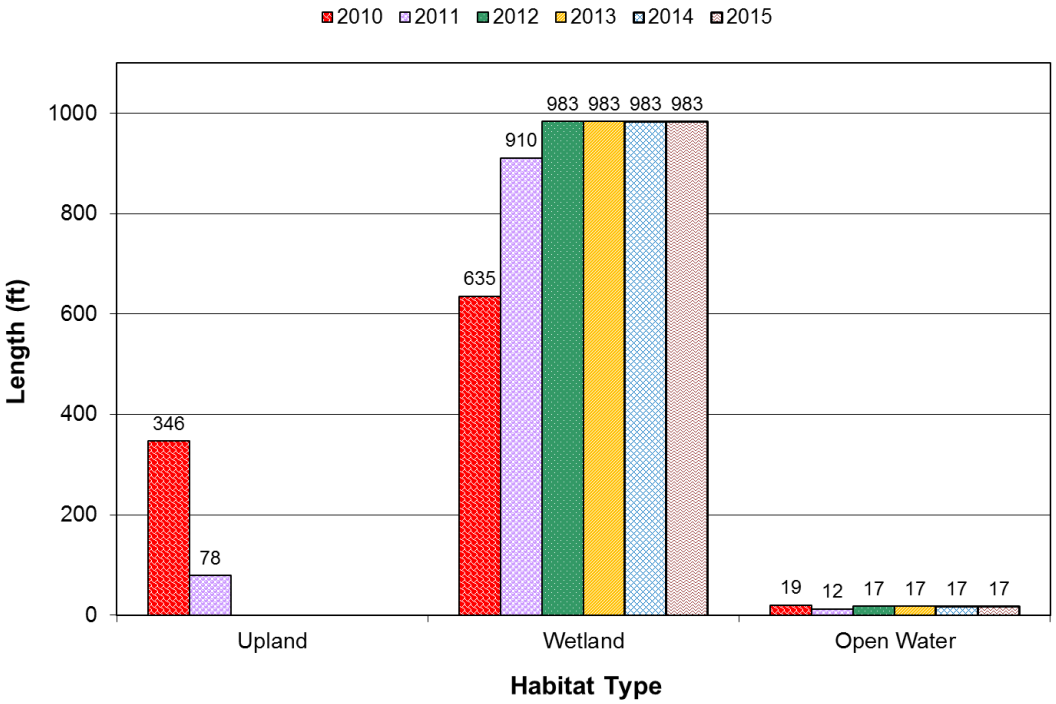


Chart 7. Length of habitat types within transect T-2 from 2010 to 2015.

Canada thistle, oxeye daisy (*Leucanthemum vulgare*), and Gypsy flower (*Cynoglossum officinale*, called houndstongue on 1988 list), Priority 2B noxious weeds, were identified at the McGinnis Creek Mitigation Site. Infestations ranged in size from less than 0.1 acre to a maximum 1.0 acre in size with cover classes ranging from trace (less than 1 percent) to high (25 to 100 percent cover). The thistle cover was highest in Community 1 near the southeast boundary and in Community 7 north of McGinnis Creek near the northwest boundary. Canada thistle has invaded upland areas that were disturbed during construction. Two infestations of gypsy flower were mapped in the southeast quarter of the site. One infestation of oxeye daisy was mapped along the northern project boundary. The infestation size was less than 0.1 acre and the cover class was trace, at less than 1.0 percent.

Survival of containerized woody plants across the site was low in 2010 following the initial planting effort. A majority of the plants were installed on upland islands site wide. Inadequate planting methods and intensive wildlife browse and traffic severely compromised the survival of the woody plants. Initial survival rates were estimated at less than 10 percent. Additional woody species were planted in spring 2011. One hundred and fifty (150) alder (*Alnus* sp.), fifteen quaking aspen (*Populus tremuloides*), and fifteen planted willows were observed alive in 2012. Approximately 125 living alder were observed along the former channel of McGinnis Creek in 2015 which was similar to previous surveys. The survival rate of the planted alder was estimated at 40 percent. The shrubs appeared to be a combination of planted, relic, and recruited alders and were not differentiated during the field survey. The natural recruitment of quaking aspen was noted in the southeast and northeast corners of the site in 2015. Approximately 250 live quaking aspen were observed in 2015. No live red-osier dogwoods, willow (*Salix* spp.), or birch (*Betula* sp.) were observed within the planting clusters. The height and density of reed canary grass site wide obscured the smaller woody saplings complicating the survival assessment.

3.4. Soil

The project site is mapped in the Lincoln County Soil Survey (USDA 2010) as Fluvents, found on floodplains in mixed alluvium. These soil types are excessively drained, gravelly silt loams taxonomically classified as sandy, mixed, frigid Typic Udifluvents that are considered hydric.

Two test pits were profiled throughout the McGinnis Meadows mitigation site in 2015. Data points SP1 was located in wetland community 7 and met the three wetland criteria. The soil profile at SP1 contained an upper layer that was seven inches of dark gray (10YR 4/1) silty clay loam with thirty percent dark gray (2.5Y 4/1) depletions. The matrix had a lower layer that was nine inches of loam that was grayish brown (2.5Y 5/2) with 1 percent light olive brown (2.5Y 5/6) redox concentrations. The soil at SP-2 up was a black (10YR 2/1) silt loam with no hydric indicators. The data point met the wetland criteria for hydrophytic vegetation, however, there were no indicators of hydric soils or wetland

hydrology at the data point. In general, the soils evaluated within the McGinnis Meadows project area did confirm the NRCS mapped series.

3.5. Wetland Delineation

Two sites within the project area were sampled in 2015 to define the vegetation, soil, and hydrology of site wetlands (Figure 2, Appendix A). The Wetland Determination Data Forms are included in Appendix B. The July 21, 2015, delineation identified a total of 26.4 acres of wetland habitat and 0.75 acres of stream habitat within the 32.75-acre project area (Table 5). The wetland acreage decreased 0.15 acres from 2014 to 2015, the result of the expansion of upland community 1 – *Alopecuris/Phalaris* in the northern portion of the project area. Wetland habitat on the site included the aquatic bed wetland community (Type 2) that has established in the open water areas of the constructed depressions from 2011 through 2015. The percent cover of vegetation within the depressions has increased annually. The MDT seeks to obtain approximately 8,835 stream credits for the restoration of 2,850 linear feet (0.75 acres) of McGinnis Creek associated with the area below the OHWM of this channel.

Table 5. Total wetland and stream habitat acres delineated from 2010 to 2015 at the McGinnis Meadows Wetland Mitigation Site.

Habitat Type	2010 (ac)	2011 (ac)	2012 (ac)	2013 (ac)	2014 (ac)	2015 (ac)
Unvegetated Open Water	1.00	0.00	0.00	0.00	0.00	0.00
Wetlands	18.22	20.64	25.12	25.38	26.55	26.40
Total Wetland Habitat	**19.22**	**20.64**	**25.12**	**25.38**	**26.55**	**26.40**
McGinnis Creek - open water	0.75	0.75	0.75	0.75	0.75	0.75
Total Stream Habitat	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**

3.6. Wildlife

Table 6 is a comprehensive list of animal species observed directly or indirectly from 2010 to 2015 (Mitigation Monitoring Form, Appendix B). Species identified in 2015 included five bird species, one frog (*Rana* sp.), three white-tailed deer (*Odocoileus virginianus*), one meadow vole (*Microtus pennsylvanicus*), and one coyote (*Canis latrans*). Several small, unidentified fish were observed in McGinnis Creek. The birds seen in 2015 are listed in bold type in Table 6. Five bird boxes were installed onsite in fall 2012. The bird boxes were unoccupied and appeared to be unused in 2015.

Table 6. Wildlife species observed at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIANS	
Columbia Spotted Frog	*Rana luteiventris*
Frog sp.	***Rana* sp.**
Western Toad	*Bufo boreas*
REPTILES	
Common Gartersnake	***Thamnophis sirtalis***
BIRDS	
Alder Flycatcher	*Empidonax alnorum*
American Robin	*Turdus migratorius*
American Three-toed Woodpecker	*Picoides dorsalis*
Bald Eagle	*Haliaeetus leucocephalus*
Bank Swallow	*Riparia riparia*
Black-billed Magpie	*Pica hudsonia*
Bufflehead	*Bucephala albeola*
Calliope Hummingbird	*Stellula calliope*
Canada Goose	***Branta canadensis***
Cedar Waxwing	*Bombycilla cedrorum*
Common Merganser	*Mergus merganser*
Common Raven	*Corvus corax*
Common Sandpiper	*Actitis hypoleucos*
Eastern Kingbird	*Tyrannus tyrannus*
Evening Grosbeak	*Coccothraustes vespertinus*
Gadwall	*Anas strepera*
Golden Eagle	*Aquila chrysaetos*
Gray Catbird	*Dumetella carolinensis*
Great Blue Heron	*Ardea herodias*
Great Horned Owl	*Bubo virginianus*
Hairy Woodpecker	*Picoides villosus*
Mallard	*Anas platyrhynchos*
Mountain Bluebird	*Sialia currucoides*
Northern Flicker	*Colaptes auratus*
Northern Harrier	*Circus cyaneus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Song Sparrow	*Melospiza melodia*
Sora	***Porzana carolina***
Sparrow sp.	
Spotted Sandpiper	*Actitis macularius*
Swallow sp.	
Tree Swallow	***Tachycineta bicolor***
Turkey Vulture	*Cathartes aura*
Unknown Flycatcher	
Yellow Warbler	*Dendroica petechia*

Species identified in 2015 are **bolded**.

Table 6 (continued). Wildlife species observed at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015.

COMMON NAME	SCIENTIFIC NAME
BIRDS	
Western Kingbird	***Tyrannus verticalis***
Western Meadowlark	*Sturnella neglecta*
Western Tanager	*Piranga ludoviciana*
Wilson's Snipe	***Gallinago delicata***
Wood Duck	*Aix sponsa*
Yellow Warbler	*Dendroica petechia*
MAMMALS	
Coyote	***Canis latrans***
Deer Sp.	*Odocoileus vsp.*
Elk or Wapiti	*Cervus canadensis*
Gray Wolf	*Canis lupus*
Meadow Vole	***Microtus pennsylvanicus***
Moose	*Alces americanus*
Richardson's Ground Squirrel	*Spermophilus richardsonii*
Striped Skunk	*Mephitis mephitis*
White-tailed Deer	***Odocoileus virginianus***
FISH	
Trout sp.	

Species identified in 2015 are **bolded**.

3.7. Functional Assessment

Functional assessments were completed on four AAs from 2010 to 2015 using the 2008 MWAM (Table 7). The MWAM forms are included in Appendix B. The four AAs were divided into creation (8.6 acres), restoration (re-establishment and rehabilitation – 16.6 acres), enhancement (existing emergent wetland – 0.9 acres), and preservation (existing riverine wetlands – 0.30 acres) (Figure 4 in Appendix A).

The original onsite wetlands were impacted historically from grazing, leveling, channel straightening, and hydrological alterations, according to the 2005 baseline site evaluation. The wetland conservation easement area has been fenced and grazing has been excluded. David, Evans & Associates rated the historic waters of the US as Category III wetlands using the 1999 MDT Wetland Assessment Method.

Approximately 8.6 acres of wetlands have developed within the created cells in the southeastern quadrant of the project area and in surrounding areas. The cover of wetland vegetation within the footprint of the excavated cells developed rapidly from 2010 to 2015 as documented in the site photographs. The area surrounding the created cells has also been developing into wetland communities and have been added to the total creation credit acres. The improvement in

percent cover resulted in a corresponding increase in the function and value ratings. The creation AA received 79.0 percent of the total possible points in 2013 through 2015, an increase from 69.0 percent in 2012. This AA achieved a total of 67.94 functional units in 2015. Ratings in 2015 were excellent for general wildlife habitat and 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 cells within the project area that occur in the designated restoration area have been accounted for in the restoration AA.

The area of the restoration AA was 16.6 acres in 2015. The restoration/rehabilitation of the existing wet meadow received 81.8 percent of the total possible points and attained 149.4 functional units, 13.4 fewer than in 2014. The decrease in functional units occurred primarily to the correction of the acreage considered restoration in 2015. A portion of the acreage previously reported as restoration has been included in 2015 creation AA. The restoration AA received excellent ratings for general wildlife habitat and production export/food chain support. The AA received high ratings for MTNHP species habitat, short and long-term surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, groundwater discharge/recharge, and recreation/education potential.

The 0.9-acre enhancement AA received 45.0 percent of the total possible points in 2015, an increase of 4.4 percent since 2011. Many of the woody plants installed in this area with the intention of enhancing structural diversity did not survive. This AA attained 4.05 functional units in 2015. The wetland area that was considered as enhancement credit acres was corrected using GIS in 2015. In addition, the score for General Fish Habitat was corrected to Not Applicable due to the lack of connection to any channel or fish habitat. The correction of the acreage and removal of General Fish Habitat resulted in a lower score than what was reported in 2014.

The preservation AA for the existing riverine wetlands along the former channel of McGinnis Creek was defined in the USACE-approved mitigation plan as 0.30 acres in size. The wetland fringe along the former channel of McGinnis Creek currently encompasses 0.51 acres as a result of increased water levels once the former channel of McGinnis Creek was plugged in 2010. The additional 0.21 acres has been included in the creation AA in this monitoring report to maintain congruence between the approved mitigation plan and original credit ratios. The Preservation AA evaluated only the 0.30 acres abutting the plugged former channel of McGinnis Creek. This AA received 79.0 percent of the total points and 2.37 functional units in 2013 through 2015. The AA received excellent ratings in general wildlife habitat and high ratings for flood attenuation, short and long term surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, groundwater discharge/recharge, and recreation/education potential.

Table 7. Functions and Values at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015.

Function and Value Parameters 2008 MDT Montana Wetland Assessment Method[1]	2010 Creation (Excavated Cells)	2011 Creation (Excavated Cells)	2012 Creation (Excavated Cells)	2013 Creation (Excavated Cells)	2014 Creation (Excavated Cells)	2015 Creation (Excavated Cells)	2010 Restoration (Re-establishment and Rehabilitation-Existing wet meadow)	2011 Restoration (Re-establishment and Rehabilitation-Existing wet meadow)	2012 Restoration (Re-establishment and Rehabilitation-Existing wet meadow)	2013 Restoration (Re-establishment and Rehabilitation-Existing wet meadow)	2014 Restoration (Re-establishment and Rehabilitation-Existing wet meadow)	2015 Restoration (Re-establishment and Rehabilitation-Existing wet meadow)
Listed/Proposed T&E Species	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	Low (0.2)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.7)	High (1.0)	High (1.0)
General Wildlife Habitat	Low (0.3)	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc (1.0)	Exc (1.0)	Mod (0.7)	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	Mod (0.7)	High (0.8)	High (0.8)	High (0.8)	Mod (0.7)	Mod (0.7)
Flood Attenuation	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.5)	High (0.8)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)
Short and Long Term Surface Water Storage	Low (0.3)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	Mod (0.7)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
Sediment/Shoreline Stabilization	NA	Mod (0.7)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	Low (0.3)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/ Food Chain Support	Low (0.3)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc. (1.0)	Exc (1.0)	Exc (1.0)
Groundwater Discharge/Recharge	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	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)	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	Low (0.05)	High (0.15)	High (0.20)	High (0.20)	High (0.20)	High (0.20)	Low (0.05)	High (0.15)	High (0.20)	High (0.20)	High (0.20)	High (0.20)
Actual Points / Possible Points	**3.45/9**	**6.65 / 10**	**6.90 / 10**	**7.90 / 10**	**7.90 / 10**	**7.90 / 10**	**7.25/11**	**8.55 / 11**	**8.70 / 11**	**8.80 / 11**	**9.0 / 11**	**9.0 / 11**
% of Possible Score Achieved	**38.3**	**66.5**	**69.0**	**79.0**	**79.0**	**79.0**	**65.9**	**77.7**	**79.1**	**80.0**	**81.8**	**81.8**
Overall Category	**III**	**II**	**II**	**II**	**II**	**II**	**III**	**II**	**II**	**II**	**I**	**I**
Acreage of Assessed Aquatic Habitats within Easement (ac)	**0.20**	**6.42**	**6.42**	**6.42**	**6.42**	**8.60**	**16.57**	**12.60**	**17.08**	**17.34**	**18.09**	**16.60**
Functional Units (acreage x actual points).	**0.69**	**42.69**	**44.30**	**50.72**	**50.72**	**67.94**	**120.13**	**107.73**	**148.60**	**152.59**	**162.81**	**149.40**

Table 7 (Continued). Functions and Values at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2015.

Function and Value Parameters 2008 MDT Montana Wetland Assessment Method[1]	2010 Enhancement (Existing emergent wetland)	2011 Enhancement (Existing emergent wetland)	2012 Enhancement (Existing emergent wetland)	2013 Enhancement (Existing emergent wetland)	2014 Enhancement (Existing emergent wetland)	2015 Enhancement (Existing emergent wetland)	2010 Preservation (Existing riverine wetlands)	2011 Preservation (Existing riverine wetlands)	2012 Preservation (Existing riverine wetlands)	2013 Preservation (Existing riverine wetlands)	2014 Preservation (Existing riverine wetlands)	2015 Preservation (Existing riverine wetlands)
Listed/Proposed T&E Species	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	Low (0.2)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Low (0.1)	Low (0.1)	Low (0.2)	Mod (0.6)	Mod (0.6)	Mod (0.6)
General Wildlife Habitat	Mod (0.5)	Mod (0.5)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	Mod (0.7)	High (0.9)	Exc. (1.0)	Exc. (1.0)	Exc (1.0)	Exc (1.0)
General Fish/Aquatic Habitat	NA	NA	NA	NA	Mod (0.7)	NA	NA	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
Short and Long Term Surface Water Storage	Low (0.3)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Mod (0.4)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Sediment/Nutrient/Toxicant Removal	High (1.0)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	NA	NA	NA	NA	NA	NA	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/ Food Chain Support	Mod (0.4)	Low (0.3)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Groundwater Discharge/Recharge	Mod (0.7)	NA	NA	Low (0.1)	Low (0.1)	Low (0.1)	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)	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	Low (0.05)	High (0.15)	High (0.20)	High (0.20)	High (0.20)	High (0.20)	Low (0.05)	High (0.15)	High (0.2)	High (0.2)	High (0.2)	High (0.2)
Actual Points / Possible Points	**4.25/9**	**3.25 / 8**	**4.0 / 8**	**4.5 / 9**	**5.2 / 9**	**4.5 / 9**	**6.25/10**	**7.25 / 10**	**7.50 / 10**	**7.90 / 10**	**7.90 / 10**	**7.90 / 10**
% of Possible Score Achieved	**47.2**	**40.6**	**50.0**	**50.0**	**57.8**	**45.0**	**62.5**	**72.5**	**75.0**	**79.0**	**79.0**	**79.0**
Overall Category	**III**	**III**	**III**	**III**	**II**	**II**	**III**	**II**	**II**	**II**	**II**	**II**
Acreage of Assessed Aquatic Habitats within Easement (ac)	**1.74**	**1.32**	**1.32**	**1.32**	**1.74**	**0.90**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**
Functional Units (acreage x actual points).	**7.40**	**4.29**	**5.28**	**5.94**	**9.05**	**4.05**	**1.88**	**2.18**	**2.25**	**2.37**	**2.37**	**2.37**

[1]Berglund and McEldowney 2008 MDT MWAM.

3.8. Photo Documentation

Photographs taken at photo points one through seven (PP1 through PP7, Figure 2, Appendix A) are shown on pages C-1 to C-12 of Appendix C. Transect end points are shown on pages C-13 to C-16. The stream cross-sections are presented on pages C-17 through C-28 and photos of data points are included on pages C-29 and C-30.

3.9. Maintenance Needs

Canada thistle, oxeye daisy, and Gypsy flower (called houndstongue on 2015 noxious weed list), Priority 2B noxious weeds, were identified at the McGinnis Creek Mitigation Site. Infestations ranged in size from less than 0.1 acre to a maximum 1.0 acre in size with cover classes ranging from trace (less than 1 percent) to high (25 to 100 percent cover). The thistle cover was highest in Community 1 near the southeast boundary and in Community 7 north of McGinnis Creek near the northwest boundary. Canada thistle has invaded upland areas that were disturbed during construction. Two infestations of gypsy flower were mapped in the southeast quarter of the site. One infestation of oxeye daisy was mapped along the northern project boundary. The infestation size was less than 0.1 acre and the cover class was trace, at less than 1.0 percent. The MDT has an ongoing weed assessment and management program for their mitigation sites, which included spraying this site on July 18, 2015.

Five bird boxes were installed onsite in fall 2012 and were unused in 2015. The mitigation site design relied on the excavation of shallow depressions to intercept groundwater, an increase in hydrologic connectivity with McGinnis Creek and the adjacent floodplain, and the passive increase in the local water table. Consequently, water control structures were not a part of the design. The majority of fencing surrounding the perimeter of the site was intact in 2015. A dead tree has fallen on the fence near Photo Point 6. The top wire of the fence is down near the pullout along the east boundary. In addition, the fencing is compromised along the southwest boundary and evidence (e.g., ATV trail use) that the adjacent neighbor is accessing the site in this area was found.

3.10. Current Credit Summary

Goals established in 2009 for the McGinnis Meadows mitigation project included the restoration of approximately 0.8 acres of riparian/stream habitat on McGinnis Creek and 17.3 acres of degraded wetlands. Credit was to be awarded for creation of 2.9 acres of emergent wetlands and enhancement of 1.74 acres of existing emergent wetland and an intermittent drainage. Preservation of 0.3 acres of existing riparian communities along the abandoned McGinnis Creek corridor and maintenance of 2.2 acres of upland buffer provided additional wetland credits. Table 8 and Table 9 detail the project credit ratios approved by the USACE and the calculated credit acreages from 2010 to 2015. Total wetland mitigation credits calculated for the McGinnis Meadows site in 2015 were 20.48 credit acres, an increase of 0.9 credit acres since 2014.

The acreage of the created wetland cells has exceeded the anticipated 2.90 acres proposed in the 2009 MDT Mitigation Plan by 5.7 acres. The credit for the excavated wetland depressions and surrounding wetland areas was estimated at 8.6 credit acres in 2015 based on a 1:1 creation to impact credit ratio.

Approximately 16.6 acres of wetland were delineated within the restoration (rehabilitation) AA in 2015, a 1.49-acre decrease since 2014. The decrease is primarily due to the correction of wetland area considered restoration. The restored area included the pre-existing impaired reed canary grass and field-meadow foxtail meadow characterized by wetland community type 7 – *Phalaris/Alopecurus* as well as several restored wetland cells characterized by community type 19 – *Carex* spp. The estimated credit acres for restoration was 11.07 in 2015, based on a 1.5:1, restoration to impact, credit ratio.

The approved 0.30 acreage presented in the Mitigation Plan was used to calculate the preservation credit estimate. Preservation credits were 0.08 acre in 2015 based on a 4:1 preservation to impact ratio.

The enhancement AA included the existing emergent wetland located along the south and southwest boundary of the property, upgradient from the channel restoration area. The 2015 wetland delineation identified 0.90 acres within the enhancement AA. This number is lower than previous years due to corrections made to the area identified as the enhancement AA based on the georeferenced conceptual plan. The 2011 through 2013 wetland delineation identified 1.32 acres of wetland within this AA. The wetland delineation in 2014 defined 1.74 wetland acres in this AA. However, after overlaying the delineated wetland map onto the georeferenced Conceptual Plan (Appendix D) it was found that a portion of the wetland that had been applied to the Enhancement credit scheme actually fell within the Creation credit area. Applying the USACE approved 3:1 credit ratio to this area netted 0.3 acre of wetland credit in 2015, a decrease of 0.28 acre since 2014. The remaining portion of the wetland acres were applied to the Creation credit acres.

The restored McGinnis Creek channel encompassed 0.75 acre of riverine habitat bisecting the site. The MDT seeks to obtain approximately 8,835 stream credits for the restoration of 2,850 linear feet of McGinnis Creek associated with the area below the OHWM of the channel. This acreage was excluded from the wetland credit totals summarized on Table 8. The MDT and USACE will calculate the stream credits separately once monitoring has been concluded.

Table 8. Summary of Wetland Credits at the McGinnis Meadows Wetland Mitigation Site from 2010 to 2012.

Proposed Mitigation Activity	Compensatory Mitigation Type	COE Mitigation Ratios	Proposed Acres	Final Credit Estimate (Acres)	2010 Delineated Acreage	2010 Credit (acres)	2011 Delineated Acreage	2011 Credit (acres)	2012 Delineated Acreage	2012 Credit (acres)
Creation of palustrine emergent depression wetlands through shallow excavation.	Creation	1:1	2.90	2.90	0.20	0.20	6.42	6.42	6.42	6.42
Restoration/Re-establishment of the McGinnis Creek Channel and wetland fringe.	Restoration (Re-Establishment)	1:1	0.80	0.80	0.75*	0.75*	0.75*	0.75*	0.75*	0.75*
Rehabilitation of existing impaired wet meadow wetlands.	Restoration (Rehabilitation)	1.5:1	17.30	11.53	16.57	11.05	12.60	8.40	17.08	11.39
Enhancement of existing emergent wetland upgradient of channel restoration.	Enhancement	3:1	1.74	0.58	1.74	0.58	1.32	0.44	1.32	0.44
Preservation of existing wetlands within abandoned McGinnis Creek reaches.	Preservation	4:1	0.30	0.08	0.30	0.08	0.30	0.08	0.30	0.08
Maintenance of upland buffer averaging 50 feet in length on site perimeter.	Upland Buffer	5:1	2.20	0.44	2.20	0.44	2.20	0.44	2.20	0.44
Total				**16.33**	**21.01**	**12.34**	**22.84**	**15.78**	**27.32**	**18.77**

*Stream Credit being sought for McGinnis Creek, acreage excluded from total.

Table 9. Summary of Wetland Credits at the McGinnis Meadows Wetland Mitigation Site from 2013 to 2015.

Proposed Mitigation Activity	Compensatory Mitigation Type	COE Mitigation Ratios	Proposed Acres	Final Credit Estimate (Acres)	2013 Delineated Acreage	2013 Credit (acres)	2014 Delineated Acreage	2014 Credit (acres)	2015 Delineated Acreage	2015 Credit (acres)
Creation of palustrine emergent depression wetlands through shallow excavation.	Creation	1:1	2.90	2.90	6.42	6.42	6.42	6.42	8.60	8.60
Restoration/Re-establishment of the McGinnis Creek Channel and wetland fringe.	Restoration (Re-Establishment)	1:1	0.80	0.80	0.75*	0.75*	0.75*	0.75*	0.75*	0.75*
Rehabilitation of existing impaired wet meadow wetlands.	Restoration (Rehabilitation)	1.5:1	17.30	11.53	17.34	11.56	18.09	12.06	16.60	11.07
Enhancement of existing emergent wetland upgradient of channel restoration.	Enhancement	3:1	1.74	0.58	1.32	0.44	1.74	0.58	0.90	0.30
Preservation of existing wetlands within abandoned McGinnis Creek reaches.	Preservation	4:1	0.30	0.08	0.30	0.08	0.30	0.08	0.30	0.08
Maintenance of upland buffer averaging 50 feet in length on site perimeter.	Upland Buffer	5:1	2.20	0.44	2.20	0.44	2.20	0.44	2.20	0.44
Total				**16.33**	**27.58**	**18.94**	**28.75**	**19.58**	**28.60**	**20.48**

*Stream Credit being sought for McGinnis Creek, acreage excluded from total.

Table 10 provides a summary of the site's performance against approved success criteria. All wetlands delineated within the site in 2015 satisfied the criteria for wetland hydrology, hydrophytic vegetation, and hydric soils. The cover of wetland plants increased significantly from 60 percent in 2010 to 95 percent from 2012 to 2015. The success criteria stipulating 70 percent cover of wetland plants was met site-wide in 2012. The cover density continued to increase into 2015. Vegetation cover within the disturbed areas of the upland buffer also exceeded 50 percent by 2012. The cover of state-listed noxious weed species in the site wetlands has remained less than five percent, satisfying the performance standard. MDT continues to monitor and control noxious weeds within this mitigation site. The woody plants installed in 2011 exhibited high mortality immediately following installation with approximately 20 percent survival. The majority of woody plants that initially survived have continued to develop. The success criterion for 50 percent survival of the woody vegetation has not been met. An increase in natural recruitment of quaking aspen and speckled alder was observed in 2015. Supplemental plantings of shrubs/trees should be considered at this site to meet this criterion. Photographs of the cross-sections in Appendix C illustrate the high vegetation cover on the banks of the restored channel. The McGinnis Creek restoration success criterion pertaining to well-vegetated banks with a majority of deep-rooting riparian and wetland plant species has been satisfied. The stream banks of McGinnis Creek were minimally disturbed during construction and are primarily vegetated with reed canary grass.

Table 10. Summary of success criteria and site performance.

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Characteristics	All restored, created, enhanced, and preserved wetlands within the project limits will meet the three parameter criteria for hydrology, vegetation, and soils as outlined in the 1987 Wetland Delineation Manual and 2010 Mountains, Valleys, Coast Region.	Y	Areas identified as wetland habitat within the mitigation site meet the three parameter criteria.
Wetland Hydrology	Soil saturation present for at least 12.5 percent of the growing season.	Y	Areas identified as wetland habitat within the mitigation site exhibit soil saturation for a minimum 12.5 percent of growing season.
Hydric Soil	Hydric soil conditions present or appear to be forming.	Y	Hydric soil characteristics, including redoximorphic concentrations and depleted matrix, have developed throughout a majority of the constructed wetlands.
	Soil is sufficiently stable to prevent erosion.	Y	Disturbed soil is stable and does not exhibit signs of erosion.
	Soil is able to support plant cover.	Y	Plant cover across disturbed soils is near 100 percent.
Hydrophytic Vegetation	Achieved where aerial cover of facultative or wetter species is greater than or equal to 70 percent.	Y	Areas identified as wetland habitat within the mitigation site support a prevalence of hydrophytic vegetation (OBL, FACW, and FAC) at greater than 70 percent cover.
	Montana State-listed noxious weeds do not exceed 5 percent cover.	Y	Montana State-listed noxious weed cover within wetland areas of the site is estimated at 2 to 3 percent.
Woody Plants	Plantings will be considered successful where they exceed 50 percent survival after 5 years.	N	The percentage of living woody vegetation (including natural recruitment of *Alnus* among the former channel) is well below the 50 percent target.
Open Water	Open water will be considered successful and creditable.	Y	Open water appears to be perennial in several of the excavated cells. These areas exhibit vegetation cover generally greater than 20 percent.
McGinnis Creek Channel	Revegetation along the new McGinnis Creek channel corridor will be considered successful when banks are vegetated with a majority of deep-rooting riparian and wetland plant species.	Y	Vegetation along the constructed McGinnis Creek support robust vegetation with high root-stability indices and predominantly includes reed canarygrass.
	The intent of the stream restoration is to allow the stream to migrate naturally within the floodplain and to give it enough room to move and stabilize itself within the site.	Y	The stream has plenty of room to migrate within the boundary of the mitigation site.
Upland Buffer	Noxious weeds do not exceed 5 percent cover within upland buffer area.	Y	Noxious weed cover is less than 5 percent within the upland buffer.
	Any area disturbed within creditable buffer zone must have at least 50 percent aerial cover of non-weed species by end of monitoring period.	Y	Disturbed areas are well-vegetated (~100 percent) by non-weed species.
Weed Control	Based upon annual monitoring of the site to determine weed species and degree of infestation within the site. Control measures, based upon the monitoring results, will be implemented by MDT to minimize and/or eliminate the intrusion of State-listed noxious weed species within the site.	Y	State-listed noxious weed species across the site have been mapped yearly. Maps of weed infestations have been provided to MDT for evaluation and control measures have been employed.
Fencing	Install wildlife-friendly fencing along the easement boundaries.	Y	Wildlife-friendly fencing has been installed around the easement boundaries. A tree has fallen on the western fence near Photopoint 6 and repairs are needed.

4. REFERENCES

Berglund, J. and R. McEldowney. 2008. *MDT Montana Wetland Assessment Method.* Prepared for Montana Department of Transportation, Helena, Montana. Post, Buckley, Schuh, & Jernigan, Helena, Montana. 42pp.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. US Army Corps of Engineers. Washington, DC.

Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2014. *The National Wetland Plant List. 2014 Update of Wetland Ratings*. Phytoneuron 2014-41:1-42.

Montana Department of Transportation, 2009 McGinnis Meadows Wetland Mitigation Plan, Watershed #1 – Kootenai River Basin, Lincoln County, Montana

Reed, P.B. 1988. *National list of plant species that occur in wetlands: North West (Region 9)*. Biological Report 88(26.9), May 1988. US Fish and Wildlife Service, Washington, DC.

US Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-3.Vicksburg, MS: US Army Engineer Research and Development Center.

Winward, Alma H. 2000. *Monitoring the Vegetation Resources in Riparian Areas*. RMRS-GTR-47. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 49p.

Websites:

Montana Department of Agriculture. Montana Noxious Weed List. July 2015. Accessed in October 2015 http://agr.mt.gov/agr/Programs/Weeds/PDF/2015WeedList.pdf

United States Department of Agriculture-Natural Resource Conservation Service. Web Soil Survey for Lincoln County, Montana. Accessed in October 2010 at: http://websoilsurvey.nrcs.usda.gov/app/.

Western Regional Climate Center. United States Historical Climatology Network. Reno, Nevada. Accessed October 2014 at: http://www.wrcc.dri.edu/CLIMATEDATA.html.

United States Department of Agriculture-Natural Resource Conservation Service. Accessed in December 2013 at: http://www.wcc.nrcs.usda.gov/climate/wetlands.html.

Appendix A

Project Area Maps – Figures 2, 3, and 4

MDT Wetland Mitigation Monitoring
McGinnis Meadows
Lincoln County, Montana

Figure 2: 2015 Monitoring Activity Locations

PP6
PP7
PP1
XS-1
T-1 start
SP-01
SP-02
T-1 end
PP2
PP3
XS-2
T-2 start
XS-3
T-2 end
MW 3
PP4
MW 2
Illegal Access Road
MW 1
PP5

Legend

- Vegetation Transect
- Monitoring Limits
- Data Points
- Photo Points
- Monitoring Wells
- Cross Section

Base Photography Date: June 26, 2015

N

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: Lincoln Co., MT

PROJECT NO: STPX-NH 27(17)

FILE: McGinnis/Monitor2015.mxd

Project Name: McGinnis Meadows Mitigation Site

Drawing Title: 2015 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
JJ	JJ	JJ

SCALE: As Shown

Drawn: October 16, 2015

PROJ MGR: J Johnson

CONFLUENCE consulting incorporated

Figure 2

REV -

Figure 3: 2015 Mapped Site Features

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 AND OTHER USERS OF THE USER'S OWN RISK.

Noxious Weeds
- Cynoglossum officinale
- Cirsium arvense
- Leucanthemum vulgare

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 (6-25% cover)
- H = High (26-100% cover)

Vegetation Community Types
1. Alopecurus pratensis/Phalaris arundinacea
2. Aquatic Macrophytes/Open Water
4. Picea engelmannii/Alopecurus pratensis
5. Phalaris arundinacea/Alnus incana
6. Carex utriculata
7. Phalaris arundinacea/Alopecurus pratensis
11. Alnus incana/Phalaris arundinacea
14. Alopecurus pratensis/Pseudotsuga menziesii
16. Phalaris arundinacea/Soil Mounds
18. Alopecurus pratensis/Carex spp.
19. Carex sp./Eleocharis Palustris

Acreages

Project Area	32.75 acres
Total Aquatic Habitat	27.15 acres
McGinnis Creek	0.75 acres
Net Wetlands	26.4 acres
Uplands	5.6 acres

N

0 125 250 500
Feet

LOCATION: Lincoln Co., MT
PROJECT NO: STPX-NH 27(17)
FILE: McGinnis/Veg2015.mxd

Project Name: McGinnis Meadows Mitigation Site
Drawing Title: 2015 Mapped Site Features

DRAWN JJ | CHECKED JJ | APPROVED JJ
SCALE: As Shown
Drawn: October 16, 2015
PROJ MGR: J Johnson

CONFLUENCE consulting incorporated

Figure 3

REV -

Figure 4: 2015 Wetland Credit Areas

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.

Legend

- Monitoring Limits
- Creation
- Enhancement
- Preservation
- Restoration
- Stream Restoration

Credit Acreages

Total Wetlands	27.15 acres
Restoration	16.6 acres
Enhancement	0.9 acres
Preservation	0.30 acres
Creation	8.6 acres
McGinnis Creek	0.75 acres

N

0 125 250 500

Feet

LOCATION: Lincoln Co., MT

PROJECT NO: STPX-NH27(17)

FILE: McGinnis/2015AAs.mxd

Project Name
McGinnis Meadows Mitigation Site

Drawing Title
2015 Wetland Credit Areas

DRAWN JJ | CHECKED | APPROVED

SCALE: Noted

Drawn: October 10, 2014

PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 4

REV -

Appendix B

2015 MDT Wetland Mitigation Site Monitoring Form
2015 USACE Wetland Determination Data Forms
2015 MDT Montana Wetland Assessment Method Forms

MDT Wetland Mitigation Monitoring
McGinnis Meadows
Lincoln County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: McGinnis Meadows Assessment Date/Time 7/21/2015

Person(s) conducting the assessment: S. Wall; R. McEldowney

Weather: sunny, temp in the 80s Location: 7 miles south of US 2

MDT District: Missoula Milepost: NA

Legal Description: T 26N R 28W Section(s) 33

Initial Evaluation Date: 7/16/2010 Monitoring Year: 6 #Visits in Year: 1

Size of Evaluation Area: 32.75 (acres)

Land use surrounding wetland:

Hay production and grazing, rural residential, USFS property (forest), Plum Creek properties (commercial forest).

HYDROLOGY

Surface Water Source: McGinnis Creek, precipitation, shallow groundwater.

Inundation: ☐ Average Depth: 1 **(ft)** Range of Depths: 0-3.5 **(ft)**

Percent of assessment area under inundation: 15 %

Depth at emergent vegetation-open water boundary: 1.5 **(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**:**

FAC-neutral test, geomorphic position, drainage patterns, hydrogen sulfide odor

Groundwater Monitoring Wells

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

Well ID	Water Surface Depth (ft)
MW-1	2.4
MW-2	3.2
MW-3	4.6

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:

Unnamed MW at north end. Pipe is bent below ground need a meter to be able to monitor.
Unnamed MW in northwest corner - depth to water bgs = 7.9 feet
Creek depth is variable - 1 to 3 feet
Several cells were dry or muddy this year.

VEGETATION COMMUNITIES

Site McGinnis Meadows

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

,

Community # 1 **Community Type:** Alopecurus pratensis / Phalaris arundinacea **Acres** 2.27

Species	Cover class	Species	Cover class
Achillea millefolium	0	Alopecurus pratensis	5
Cirsium arvense	1	Cynoglossum officinale	0
Geum macrophyllum	0	Mentha arvensis	0
Mimulus guttatus	0	Phalaris arundinacea	2
Pinus contorta	0	Poa pratensis	0
Populus tremuloides	0	Rumex crispus	0
Taraxacum officinale	0	Urtica dioica	1
Verbascum thapsus	0		

Comments:

This upland area is dominated by hearty facultative and facultative wet grasses. Contemporary wetland hydrology is not apparent through this community.This community does not appear to have changed since 2014.

Community # 2 **Community Type:** Aquatic macrophytes / Open Water **Acres** 1.9

Species	Cover class	Species	Cover class
Algae, green	2	Aquatic macrophytes	4
Carex bebbii	0	Carex nebrascensis	0
Carex stipata	0	Carex utriculata	1
Chara sp.	1	Cirsium arvense	0
Deschampsia caespitosa	0	Eleocharis palustris	0
Equisetum arvense	0	Geum macrophyllum	0
Glyceria grandis	2	Juncus confusus	0
Juncus ensifolius	0	Lemna minor	0
Mentha arvensis	0	Mimulus guttatus	0
Open Water	5	Persicaria amphibia	0
Phalaris arundinacea	2	Scirpus microcarpus	0
Typha latifolia	0		

Comments:

Veg com is predominantly characterized by persistent inundated growing conditions.

Community # 4 **Community Type:** Picea engelmannii / Alopecurus pratensis **Acres** 0.86

Species	Cover class	Species	Cover class
		Achillea millefolium	1
Alopecurus pratensis	5	Antennaria parvifolia	0
Cirsium arvense	3	Fragaria virginiana	0
Linum lewisii	0	Medicago lupulina	0
Mentha arvensis	0	Phalaris arundinacea	3
Phleum pratense	0	Picea engelmannii	4
Pinus contorta	1	Pinus ponderosa	1
Poa pratensis	1	Rumex crispus	0
Symphoricarpos albus	1	Taraxacum officinale	0
Urtica dioica	0		

Comments:

This upland community is on a topographic rise.

Community # 5 **Community Type:** Phalaris arundinacea / Alnus incana **Acres** 1.64

Species	Cover class	Species	Cover class
Algae, green	1	Alnus incana	3
Alopecurus pratensis	0	Carex utriculata	1
Cirsium arvense	1	Crataegus douglasii	2
Heracleum maximum	1	Mentha arvensis	0
Phalaris arundinacea	4	Urtica dioica	0

Comments:

Cirsium avense appears to have been sprayed in some locations.

Community # 6 **Community Type:** Carex utriculata / **Acres** 1.4

Species	Cover class	Species	Cover class
Carex sp.	0	Carex utriculata	5
Mentha arvensis	0	Phalaris arundinacea	4

Comments:

Community # 7 **Community Type:** Phalaris arundinacea / Carex spp. **Acres** 15.9

Species	Cover class	Species	Cover class
Alnus incana	0	Alopecurus pratensis	0
Carex athrostachya	1	Carex nebrascensis	1
Carex utriculata	1	Cirsium arvense	0
Cynoglossum officinale	0	Mentha arvensis	0
Phalaris arundinacea	5	Poa pratensis	0

Comments:

Community # 11 **Community Type:** Alnus incana / Carex utriculata **Acres** 0.51

Species	Cover class	Species	Cover class
Algae, green	0	Alnus incana	4
Alopecurus pratensis	1	Carex stipata	0
Carex utriculata	3	Cirsium arvense	0
Eleocharis palustris	0	Geum macrophyllum	0
Mentha arvensis	0	Open water	4
Phalaris arundinacea	2	Rumex crispus	0
Scirpus microcarpus	1		

Comments:

Name change for thus CT due to increase in Carex utriculata, decrease in Phalaris

Community # 14 **Community Type:** Alopecurus pratensis / Pseudotsuga menziesii **Acres** 2.16

Species	Cover class	Species	Cover class
Abies lasiocarpa	0	Achillea millefolium	0
Alnus incana	1	Alopecurus pratensis	5
Calamagrostis canadensis	0	Fragaria virginiana	0
Larix occidentalis	2	Maianthemum stellatum	0
Phalaris arundinacea	1	Pinus contorta	2
Poa pratensis	1	Pseudotsuga menziesii	4
Symphoricarpos albus	1		

Comments:

Community # 15 **Community Type:** Open Water / **Acres** 0.75

Species	Cover class	Species	Cover class
Open Water	5		

Comments:

McGinnis Creek

Community # 16 **Community Type:** Phalaris arundinacea / Soil Mounds **Acres** 0.3

Species	Cover class	Species	Cover class
Bare Ground	0	Cirsium arvense	1
Phalaris arundinacea	5	Verbascum thapsus	0

Comments:

Community # 18 **Community Type:** Alopecurus pratensis / Carex spp. **Acres** 1.33

Species	Cover class	Species	Cover class
Alopecurus pratensis	5	Carex athrostachya	2
Carex bebbii	2	Deschampsia caespitosa	2
Juncus confusus	1		

Comments:

Community # 19 **Community Type:** Carex spp. / **Acres** 3.75

Species	Cover class	Species	Cover class
Agrostis stolonifera	0	Alnus incana	1
Alopecurus pratensis	0	Aster sp.	0
Bare Ground	0	Calamagrostis canadensis	0
Carex athrostachya	0	Carex bebbii	1
Carex nebrascensis	4	Carex pachystachya	0
Carex stipata	0	Carex utriculata	4
Carex vesicaria	1	Cirsium arvense	1
Deschampsia caespitosa	0	Eleocharis palustris	2
Eleocharis sp.	0	Epilobium ciliatum	0
Geum macrophyllum	0	Glyceria grandis	0
Juncus confusus	1	Juncus effusus	0
Juncus nodosus	2	Juncus tenuis	0
Mentha arvensis	0	Open Water	0
Phalaris arundinacea	1	Poa palustris	0
Salix sp.	0	Scirpus microcarpus	0
Sparganium emersum	0	Triglochin maritima	0
Typha latifolia	2		

Comments:

Name change from 17 to 19 for this Community Type is based on a shift in dominants.

Total Vegetation Community Acreage **32.77**

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

VEGETATION TRANSECTS

Site: McGinnis Meadows Date: 7/21/2015

Transect Number: 1 **Compass Direction from Start:** 318

Interval Data:

Ending Station 30 **Community Type:** Picea engelmannii / Alopecurus pratensis

Species	Cover class	Species	Cover class
Alopecurus pratensis	5	Cirsium arvense	1
Phalaris arundinacea	1	Urtica dioica	0

Ending Station 80 **Community Type:** Carex sp. / Eleocharis palustris

Species	Cover class	Species	Cover class
Alopecurus pratensis	0	Carex nebrascensis	1
Carex utriculata	2	Deschampsia caespitosa	3
Eleocharis palustris	5	Glyceria grandis	0
Juncus nodosus	2	Mentha arvensis	0
Phalaris arundinacea	0		

Ending Station 295 **Community Type:** Aquatic macrophytes / Open Water

Species	Cover class	Species	Cover class
Algae, green	2	Aquatic macrophytes	5
Eleocharis palustris	1	Open Water	5
Persicaria amphibia	0		

Ending Station 323 **Community Type:** Carex sp. / Eleocharis palustris

Species	Cover class	Species	Cover class
Carex stipata	1	Carex utriculata	2
Eleocharis palustris	0	Juncus nodosus	2
Phalaris arundinacea	4	Scirpus microcarpus	2

Ending Station 363 **Community Type:** Phalaris arundinacea / Alopecurus pratensis

Species	Cover class	Species	Cover class
Alnus incana	1	Cirsium arvense	1
Cynoglossum officinale	0	Mentha arvensis	0
Phalaris arundinacea	5	Poa pratensis	0

Ending Station 504 **Community Type:** Carex sp. / Eleocharis palustris

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Alnus incana	1
Alopecurus pratensis	1	Bare Ground	1
Carex bebbii	1	Carex pachystachya	1
Carex stipata	1	Carex utriculata	1
Cirsium arvense	0	Deschampsia caespitosa	2
Eleocharis palustris	1	Juncus effusus	0
Juncus nodosus	2	Juncus tenuis	1
Mentha arvensis	0	Phalaris arundinacea	1
Salix sp.	0	Scirpus microcarpus	4
Sparganium emersum	0	Typha latifolia	1

Transect Notes:

No open water in the last segment of the transect. Scirpus microcarpus increased.

Transect Number: 2 **Compass Direction from Start:** 330

Interval Data:

Ending Station 79 **Community Type:** Phalaris arundinacea / Alopecurus pratensis

Species	Cover class	Species	Cover class
Alopecurus pratensis	2	Carex athrostachya	1
Cirsium arvense	0	Phalaris arundinacea	5

Ending Station 240 **Community Type:** Carex sp. / Eleocharis palustris

Species	Cover class	Species	Cover class
Alopecurus pratensis	1	Bare Ground	1
Calamagrostis canadensis	2	Carex bebbii	0
Carex nebrascensis	3	Carex utriculata	2
Cirsium arvense	0	Deschampsia caespitosa	0
Eleocharis palustris	3	Glyceria grandis	0
Juncus tenuis	0	Phalaris arundinacea	0
Triglochin maritima	0	Typha latifolia	1

Ending Station 346 **Community Type:** Phalaris arundinacea / Alopecurus pratensis

Species	Cover class	Species	Cover class
Phalaris arundinacea	5		

Ending Station 353 **Community Type:** McGinnis Creek /

Species	Cover class	Species	Cover class
Open Water	5		

Ending Station 399 **Community Type:** Phalaris arundinacea / Alopecurus pratensis

Species	Cover class	Species	Cover class
Phalaris arundinacea	5		

Ending Station 416 **Community Type:** Carex sp. / Eleocharis palustris

Species	Cover class	Species	Cover class
Bare Ground	2	Calamagrostis canadensis	0
Carex utriculata	4	Deschampsia caespitosa	0
Eleocharis palustris	1	Glyceria grandis	0
Phalaris arundinacea	1		

Ending Station 447 **Community Type:** Phalaris arundinacea / Alopecurus pratensis

Species	Cover class	Species	Cover class
Phalaris arundinacea	5		

Ending Station 470 **Community Type:** Carex sp. / Eleocharis palustris

Species	Cover class	Species	Cover class
Bare Ground	1	Carex utriculata	3
Eleocharis palustris	3	Glyceria grandis	2
Open Water	0	Phalaris arundinacea	1
Sparganium emersum	2		

Ending Station 523 **Community Type:** Phalaris arundinacea / Alopecurus pratensis

Species	Cover class	Species	Cover class
Carex utriculata	0	Phalaris arundinacea	5

Ending Station 533 **Community Type:** McGinnis Creek /

Species	Cover class	Species	Cover class
Open Water	5		

Ending Station 600 **Community Type:** Phalaris arundinacea / Alopecurus pratensis

Species	Cover class	Species	Cover class
Phalaris arundinacea	5		

Ending Station 785 **Community Type:** Carex sp. / Eleocharis palustris

Species	Cover class	Species	Cover class
Bare Ground	1	Carex vesicaria	4
Eleocharis palustris	0	Eleocharis sp.	0
Glyceria grandis	0	Juncus confusus	4
Juncus nodosus	2	Phalaris arundinacea	2
Typha latifolia	2		

Ending Station 880 **Community Type:** Phalaris arundinacea / Alopecurus pratensis

Species	Cover class	Species	Cover class
Alopecurus pratensis	0	Carex nebrascensis	1
Phalaris arundinacea	5		

Ending Station 938 **Community Type:** Carex utriculata /

Species	Cover class	Species	Cover class
Carex sp.	5	Phalaris arundinacea	1

Ending Station 1000 **Community Type:** Phalaris arundinacea / Alopecurus pratensis

Species	Cover class	Species	Cover class
Alopecurus pratensis	0	Carex nebrascensis	1
Phalaris arundinacea	5		

Transect Notes:

new segment added from 880 to 938

PLANTED WOODY VEGETATION SURVIVAL

McGinnis Meadows

Planting Type	#Planted	#Alive	Notes
Alnus sp.	360	125	Native recruitment along former channel of McGinnis Creek
Betula	100	0	Betula sp.
Cornus stolonifera	100	0	
Populus tremuloides	180	250	Natural recruitment in SE and NE corners of site.
Salix sp.	100	0	

Comments

McGinnis Meadows

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: nest boxes

How many? 5

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:
Bird boxes are unnoccupied and appear to be unnused in 2015

Species	#Observed	Behavior	Habitat
Canada Goose	6		AB, AB, I, MA, OW,
Cliff Swallow	1		AB, AB, I, MA, MF,
Sora	1		MA,
Sparrow Sp.	4		SS, UP, WM,
Swallow sp.	7		AB, AB, I, MA, MF,
Tree Swallow	3		AB, AB, I, MA, MF,

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
Coyote		Yes	No	No	
Frog sp.	1	No	No	No	
Meadow Vole	1	No	No	No	
Trout sp.		No	No	No	
White-tailed Deer	3	No	No	No	

Wildlife Comments:

Several different age classes of trout were observed in the creek.

McGinnis Meadows

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
1827	47.965222	-115.219133	180	veg tran 2 end
1828 stitch	47.965092	-115.219429	15	PP-4 panorama
1831	47.964512	-115.217896	85	PP-2 photo 1
1832	47.964512	-115.217896	110	PP-2 photo 2
1833	47.964512	-115.217896	140	PP-2 photo 3
1834	47.964512	-115.217896	180	PP-2 photo 4
1835 stitch	47.964561	-115.218163	285	PP-3 panorama
1838 stitch	47.966015	-115.217171	240	PP-7 panorama
1841	47.964584	-115.2164	250	PP-1 photo 1
1842	47.964584	-115.2164	250	PP-1 photo 2
1843	47.964584	-115.2164	300	PP-1 photo 3
1844	47.964188	-115.216629	320	veg tran 1 start
1845	47.965172	-115.217987	140	veg tran 1 end
8542	47.964584	-115.218834	330	veg tran 2 start
8544 stitch	47.966888	-115.220978	90	PP-5 panorama
8553 stitch	47.967838	-115.217644	180	PP-6 panorama
8561			270	SP-01 wet
8563			270	SP-02 upl

Comments:

McGinnis Meadows

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

Functional Assessments

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

Functional Assessment Comments:

ATV track through reed canary grass, possibly from weed applicator. It appears that someone is firing into an embankment on mitigation property.

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? No

If yes, are the structures in need of repair?

If yes, describe the problems below.

Bank failure/calving on left bank McGinnis Creek a little downstream of the south end of the creek. Appears to be associated with Large woody debris (LWD) and possibly animal use.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: McGinnis Meadows | City/County: Lincoln | Sampling Date: 7/21/2015

Applicant/Owner: MDT | State: Montana | Sampling Point: SP-1 wet

Investigator(s): R. McEldowney, S.Wall | Section, Township, Range: S 33 T 26N R 28W

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

Subregion (LRR): LRR E | Lat: 47.963731 | Long: -115.219522 | Datum: WGS84

Soil Map Unit Name: fluvents, floodplains | NWI classification: not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☑ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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:
All three wetland parameters are present.

VEGETATION - Use scientific names of plant

Tree Stratum Plot size (30 Foot Radius)

Sapling/Shrub Stratum Plot size (30 Foot Radius)

Herbaceous Stratum Plot size (3 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status
Carex nebrascensis	30	☑	OBL
Eleocharis palustris	60	☑	OBL
Juncus nodosus	10	☐	OBL
Mentha arvensis	1	☐	FACW

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 0

Dominance Test worksheet

Number of Dominant Species that are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 % (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:
OBL species	100 X 1	100
FACW species	1 X 2	2
FAC species	0 X 3	0
FACU species	0 X 4	0
UPL species	0 X 5	0
Column Totals	101 (A)	102 (B)

Prevalence Index = B/A = 1.00990

Hydrophytic Vegetation Indicators

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is <= 3.0
- ☐ 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants
- ☐ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☑ NO ☐

Remarks:

SOIL

Sampling Point: SP-1 wet

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
0-7	10YR 4/1	70	2.5Y 4/1	30	D	M	Silty Clay Loam	**Depletions in the top 7 inches.**
7-16	2.5Y 5/2	99	2.5Y 5/6	1	C	M	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: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☑ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:
Indicator A4 is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☑ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

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): 0

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Soil saturated to the surface.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: McGinnis Meadows | City/County: Lincoln Co. | Sampling Date: 7/21/2015

Applicant/Owner: MDT | State: Montana | Sampling Point: SP-2 up

Investigator(s): R. McEldowney, S. Wall | Section, Township, Range: S 33 T 26N R 28W

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

Subregion (LRR): LRR E | Lat: 47.963731 | Long: -115.219522 | Datum: WGS84

Soil Map Unit Name: fluvents, floodplains | NWI classification: not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☑ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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:
Hydrophytic vegetation present, but hydric soils and wetland hydrology are lacking.

VEGETATION - Use scientific names of plant

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (30 Foot Radius)

Herbaceous Stratum Plot size (3 Foot Radius)

Alopecurus pratensis	95	☑	FAC
Cirsium arvense	5	☐	FAC

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 0

Dominance Test worksheet

Number of Dominant Species that are OBL, FACW or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 % (A/B)

Prevalence Index worksheet

Total % Cover of:			Multiply by:
OBL species	0	X 1	0
FACW species	0	X 2	0
FAC species	100	X 3	300
FACU species	0	X 4	0
UPL species	0	X 5	0
Column Totals	100 (A)		300 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is <= 3.0
- ☐ 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants
- ☐ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

Hydrophytic Vegetation Present? Yes ☑ NO ☐

Remarks:

SOIL

Sampling Point: SP-2 up

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

[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: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

No hydric soil indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

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 ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators present.

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name McGinnis Meadows **2. MDT project#** NH 27(17) **Control#** 4143

3. Evaluation Date 7/21/2015 **4. Evaluators** R. McEldowney, S. Wall **5. Wetland/Site# (s)** Creation

6. Wetland Location(s): T 26N **R** 28W **Sec1** 33 **T** **R** **Sec2**

Approx Stationing or Mileposts NA

Watershed 17010102 **Watershed/County** Kootenai River Lincoln County

7. Evaluating Agency confluence for MDT

8. Wetland size acres 8.6

How assessed: Measured e.g. by GPS

Purpose of Evaluation

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

9. Assesssment area (AA) size (acres) 8.6

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Aquatic Bed	Excavated	Permanent/Perennial	60
Depressional	Emergent Wetland	Excavated	Seasonal/Intermittant	40

11. Estimated Relative Abundance Common

12. General Condition of AA

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

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 contains several depression area that were excavated within uplands in 2009. Many of these depressions were ponded in 2015 with 0.2 to 1 foot of standing water. The edges were vegetated with emergent plants.

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

Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat

Surrounding land use is low density residential, moderate road density. Forest Service land and Plum Creek properties (commercial forest).

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
>=3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments: aquatic bed and emergent

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMEN

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

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

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

Secondary habitat (list Species) ○ D ○ S

Incidental habitat (list species) ◉ D ○ S grizzly bear, Canada lynx

No usable habitat ☐ S

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] 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	.3L	.1L	0L

Sources for documented use Site is witin year-round range of grizzly and lynx. Adjacent landowner reported seeing a grizzly according to 2012 monitoring report.

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 (check one based on definitions contained in instructions):

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

Secondary habitat (list Species) ◉ D ○ S great blue heron (S3), golden eagle (S3)

Incidental habitat (list species) ○ D ◉ S pileated woodpecker

No usable habitat ☐ S

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use great blue heron observed on site, golden eagle flyover in 2013. MNHP SOC list for Lincoln County.

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA (check substantial, moderate, or low based on supporting evidence): Substantial

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

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

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, check 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 ñ 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 [check] 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 borders natural forested areas under management by the USFS and Plum Creek.

14D. General Fish 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 used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [check the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ○ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating**

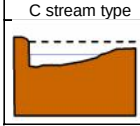
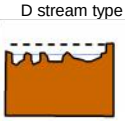
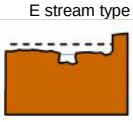
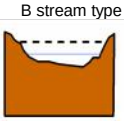
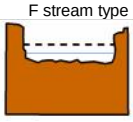
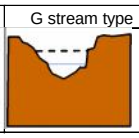
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ○ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

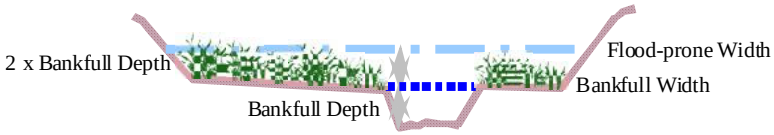
iii. Final Score and Rating: 0 NA **Comments:**

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, click ☐ **NA** here and proceed to 14F.)

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no 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

Slightly Entrenched ER = >2.2			**Moderately Entrenched ER = 1.41 – 2.2**	**Entrenched ER = 1.0 – 1.4**		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type
						



Floodprone width 18 **/** **Bankfull width** 6 **=** **Entrenchment ratio** 3

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 (check)? **Y** ○ **N** ◉

Comments: Excavated depressions hydrologically connected to periodic overbank flooding along McGinnis Creek.

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, click ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [check] 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 ñ **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: Depressions located along the floodplain of McGinnis Creek, asumes 6.42 acres flooded to a minimum of one foot.

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, click ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] 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:

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 [check] 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
ñ **65%**	1H		.7M
35-64%	.7M		.5M
< 35%	.3L	.2L	.1L

Comments: Assumes perennial open water areas subject to wave action. Banks dominated by sedges, reed canarygrass, and meadow foxtail.

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [check])

General Fish Habitat Rating (14D.iii.)	**General Wildlife Habitat Rating (14C.iii.)**		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); 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, S/I, and T/E are as previously defined, and A = "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	1E	.7H	.8H	.5M	.6M	.4M	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ○ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .8H

Comments: AA has closed depressions with no outlet, appear to be perennially saturated.

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 [check] the functional points and rating)

	Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*			
Criteria	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information	NA			

Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [check] 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: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (check) **Y** ◉ **N** ○ (if 'Yes' continue with the evaluation; if 'No' then click ☐ **NA** here and proceed to the overall summary and rating page)

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

iii. Rating (use the matrix below to arrive at [check] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

Public access, no permission required.

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)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.3	1	2.58	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	5.16	☐
C. General Wildlife Habitat	E	1	1	8.6	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.6	1	5.16	☐
F. Short and Long Term Surface Water Storage	H	1	1	8.6	☑
G. Sediment/Nutrient/Toxicant Removal	H	1	1	8.6	☑
H. Sediment/Shoreline Stabilization	H	1	1	8.6	☐
I. Production Export/Food Chain Support	H	.8	1	6.88	☐
J. Groundwater Discharge/Recharge	H	1	1	8.6	☑
K. Uniqueness	M	.4	1	3.44	☐
L. Recreation/Education Potential (bonus points)	H	.2	NA	1.72	☐
Totals:		7.9	10	67.94	
Percent of Possible Score			**79** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise 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**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☑ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

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; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING:
(check appropriate category based on the criteria outlined above)

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

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name McGinnis Meadows **2. MDT project#** NH 27(17) **Control#** 4143

3. Evaluation Date 7/21/2015 **4. Evaluators** R. McEldowney, S.Wall **5. Wetland/Site# (s)** Enhancement

6. Wetland Location(s): T 26N **R** 28W **Sec1** 33 **T** **R** **Sec2**

Approx Stationing or Mileposts NA

Watershed 17010102 **Watershed/County** Kootenai River/Lincoln County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 0.9

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 0.9

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Emergent Wetland		Temporary/Ephemeral	100

11. Estimated Relative Abundance Common

12. General Condition of AA

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

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)

Area includes existing emergent wetland along intermittent drainage.

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

Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat

Area includes existing emergent wetland. Surrounding land use is residential moderate road density. USFS and Plum Creek properties (commercial forest).

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
>=3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments: Emergent wetland

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMEN

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

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

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

Secondary habitat (list Species) ○ D ○ S

Incidental habitat (list species) ◉ D ○ S grizzly, Canada lynx

No usable habitat ☐ S

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] 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	.3L	.1L	0L

Sources for documented use site is within year round range of grizzly and lynx. Adjacent landowner reported seeing a grizzly in 2012.

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 (check one based on definitions contained in instructions):

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

Secondary habitat (list Species) ◉ D ○ S great blue heron, golden eagle

Incidental habitat (list species) ○ D ◉ S pileated woodpecker

No usable habitat ☐ S

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use great blue heron observed on site, golden eagle flyover in 2013. MNHP SOC list for Lincoln County.

14C. General Wildlife Habitat Rating:

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

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

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

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, check 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 ñ 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 [check] 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 borders natural forested areas under management by both the USFS and Plum Creek Timber company.

14D. General Fish 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 used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.) Cold Water

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [check the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ○ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating**

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ○ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

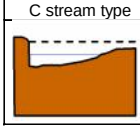
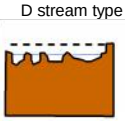
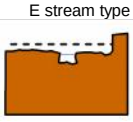
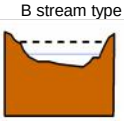
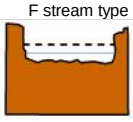
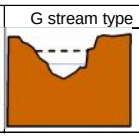
iii. Final Score and Rating: 0 NA **Comments:** Not connected to any fish habitat

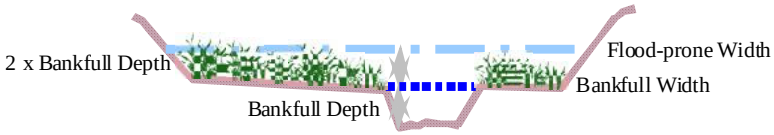
---

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, click ☐ **NA** here and proceed to 14F.)

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no 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

Slightly Entrenched ER = >2.2			**Moderately Entrenched ER = 1.41 – 2.2**	**Entrenched ER = 1.0 – 1.4**		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type
						



Floodprone width 18 **/** **Bankfull width** 6 **=** **Entrenchment ratio** 3

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 (check)? **Y** ○ **N** ◉

Comments: AA subject to periodic flooding from McGinnis Creek

---

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, click ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [check] 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 ñ **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: AA is too small to provide much flood storage

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, click ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] 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: Well vegetated with sedges, no outlet

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 [check] 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
ñ **65%**	1H	.9H	.7M
35-64%	.7M		.5M
< 35%	.3L	.2L	.1L

Comments: No wave action due to small size of AA

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [check])

General Fish Habitat Rating (14D.iii.)	**General Wildlife Habitat Rating (14C.iii.)**		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); 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, S/I, and T/E are as previously defined, and A = "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	1E	.7H	.8H	.5M	.6M	.4M	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ○ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .5M

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 [check] the functional points and rating)

	Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*			
Criteria	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information	NA			

Comments: AA has ephemeral drainage in spring

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [check] 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: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (check) **Y** ◉ **N** ○ (if 'Yes' continue with the evaluation; if 'No' then click ☐ **NA** here and proceed to the overall summary and rating page)

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

iii. Rating (use the matrix below to arrive at [check] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

Public access, no permission required.

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)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.3	1	0.27	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	0.54	☑
C. General Wildlife Habitat	H	.9	1	0.81	☑
D. General Fish Habitat	NA	0	1	0	☐
E. Flood Attenuation	M	.6	1	0.54	☑
F. Short and Long Term Surface Water Storage	L	.1	1	0.09	☐
G. Sediment/Nutrient/Toxicant Removal	H	.8	1	0.72	☑
H. Sediment/Shoreline Stabilization	NA	0	0	0	☐
I. Production Export/Food Chain Support	M	.5	1	0.45	☐
J. Groundwater Discharge/Recharge	L	.1	1	0.09	☐
K. Uniqueness	M	.4	1	0.36	☐
L. Recreation/Education Potential (bonus points)	H	.2	NA	0.18	☐
Totals:		4.5	10	4.05	
Percent of Possible Score			**45** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise 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**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☑ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

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; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING:
(check appropriate category based on the criteria outlined above)

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name McGinnis Meadows **2. MDT project#** NH27(17) **Control#** 4143

3. Evaluation Date 7/21/2015 **4. Evaluators** R. McEldowney, S. Wall **5. Wetland/Site# (s)** Preservation

6. Wetland Location(s): T 26N **R** 28W **Sec1** 33 **T** **R** **Sec2**

Approx Stationing or Mileposts NA

Watershed 17010102 **Watershed/County** Kootenai River/Lincoln County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 0.3

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 0.3

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Scrub-Shrub Wetland	Impounded	Permanent/Perennial	50
Riverine	Emergent Wetland	Impounded	Permanent/Perennial	50

11. Estimated Relative Abundance Common

12. General Condition of AA

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

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)

No disturbance within AA

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

Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat

Area includes former channel of McGinnis Creek that was abandoned when McGinnis Creek was restored. Former channel runs north-south through the property. Surrounding habitat includes undisturbed upland and other assessment areas.

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
>=3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments: Emergent and scrub-shrub

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMEN

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

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

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	○ D ○ S	
Incidental habitat (list species)	◉ D ○ S	grizzly, Canada lynx
No usable habitat	☐ S	

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] 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	.3L	.1L	0L

Sources for documented use: USFWS database, site within year-round range of grizzly and lynx. Adjacent landowner reported seeing a grizzly according to 2012 monitoring report.

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 (check one based on definitions contained in instructions):

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	◉ D ○ S	great blue heron, golden eagle
Incidental habitat (list species)	○ D ◉ S	pileated woodpecker
No usable habitat	☐ S	

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use: great blue heron observed on site, golden eagle flyover in 2013. MNHP SOC database for Lincoln County.

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA (check substantial, moderate, or low based on supporting evidence): Substantial

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

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

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, check 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 ñ 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 [check] 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 Area borders natural forested areas under management by USFS and Plum Creek.

14D. General Fish 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 used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [check the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ○ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating**

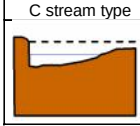
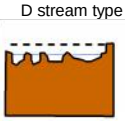
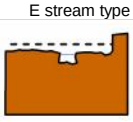
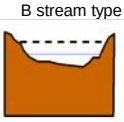
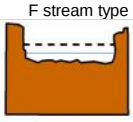
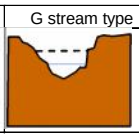
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ○ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

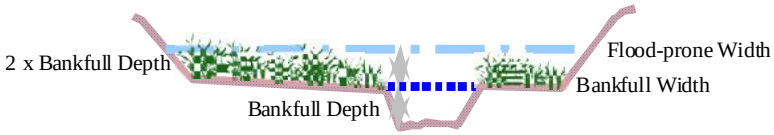
iii. Final Score and Rating: 0 NA **Comments:**

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, click ☐ **NA** here and proceed to 14F.)

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no 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

Slightly Entrenched ER = >2.2			**Moderately Entrenched ER = 1.41 – 2.2**	**Entrenched ER = 1.0 – 1.4**		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type
						



Floodprone width 18 **/** **Bankfull width** 6 **=** **Entrenchment ratio** 3

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 (check)? **Y** ○ **N** ◉

Comments: AA subject to periodic flooding from restored McGinnis Creek.

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, click ☐ **NA** here and proceed to 14G.)

i. Rating (Working from top to bottom, use the matrix below to arrive at [check] 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 ñ **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: AA includes former channel of McGinnis Creek with potential to store several feet of surface water.

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, click ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] 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: Well vegetated with restricted outlet (ditch plugs)

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 [check] 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
ñ **65%**	1H		.7M
35-64%	.7M		.5M
< 35%	.3L	.2L	.1L

Comments: Shoreline dominated by reed canarygrass, meadow foxtail, and sedges.

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [check])

General Fish Habitat Rating (14D.iii.)	**General Wildlife Habitat Rating (14C.iii.)**		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); 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, S/I, and T/E are as previously defined, and A = "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	1E	.7H	.8H	.5M	.6M	.4M	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ○ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .7M

Comments: AA is small, no surface outlet, well vegetated buffer.

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 [check] the functional points and rating)

	Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*			
Criteria	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information	NA			

Comments: Shallow water table contributes surface water to former channel of McGinnis Creek.

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [check] 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: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (check) **Y** ◉ **N** ○ (if 'Yes' continue with the evaluation; if 'No' then click ☐ **NA** here and proceed to the overall summary and rating page)

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

iii. Rating (use the matrix below to arrive at [check] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

Public access, no permission required. Signs of hunting observed during 2015 site visit.

General Site Notes

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.3	1	0.09	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	0.18	☐
C. General Wildlife Habitat	E	1	1	0.3	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	H	.9	1	0.27	☐
F. Short and Long Term Surface Water Storage	H	.8	1	0.24	☐
G. Sediment/Nutrient/Toxicant Removal	H	1	1	0.3	☑
H. Sediment/Shoreline Stabilization	H	1	1	0.3	☑
I. Production Export/Food Chain Support	M	.7	1	0.21	☐
J. Groundwater Discharge/Recharge	H	1	1	0.3	☑
K. Uniqueness	M	.4	1	0.12	☐
L. Recreation/Education Potential (bonus points)	H	.2	NA	0.06	☐
Totals:		7.9	10	2.37	
Percent of Possible Score			**79** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise 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**
- ☐ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☑ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☑ Percent of possible score > 65% (round to nearest whole #).

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; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING:
(check appropriate category based on the criteria outlined above)

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name McGinnis Meadows **2. MDT project#** NH 27(17) **Control#** 4143

3. Evaluation Date 7/21/2015 **4. Evaluators** R.McEldowney, S. Wall **5. Wetland/Site# (s)** Restoration

6. Wetland Location(s): T 26N **R** 28W **Sec1** 33 **T** **R** **Sec2**

Approx Stationing or Mileposts NA

Watershed 17010102 **Watershed/County** Kootenai River/Lincoln County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 16.6

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 16.6

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Emergent Wetland		Permanent/Perennial	5
Depressional	Emergent Wetland		Permanent/Perennial	90
Depressional	Scrub-Shrub Wetland		Permanent/Perennial	5

11. Estimated Relative Abundance Common

12. General Condition of AA

i. Disturbance: (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

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)

No disturbance within AA

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

Cirsium arvense

iii. Provide brief descriptive summary of AA and surrounding land use/habitat

AA includes previously delineated wetlands within conservation easement boundary. Adjacent land use includes low density residential, roads, USFS land, and Plum Creek Timber property.

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
>=3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	<NO	YES>	L
1 class, monoculture (1 species comprises>=90% of total cover)	L	NA	NA	NA

Comments: emergent and scrub-shrub

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMEN

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

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

Primary or critical habitat (list species)	○ D ○ S	
Secondary habitat (list Species)	○ D ○ S	
Incidental habitat (list species)	◉ D ○ S	girzzly bear, Canada lynx
No usable habitat	☐ S	

ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] 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	.3L	.1L	0L

Sources for documented use: USFWS database, site within year-round range of grizzly and lynx. Adjacent landowner reported seeing a grizzly according to 2012 monitoring report.

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 (check one based on definitions contained in instructions):

Primary or critical habitat (list species)	◉ D ○ S	Westslope cutthroat trout, Columbia river red-band trout (S1)
Secondary habitat (list Species)	◉ D ○ S	great blue heron, golden eagle
Incidental habitat (list species)	○ D ◉ S	pileated woodpecker
No usable habitat	☐ S	

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented use: MFWP surveyed, MNHP list for Lincoln County

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA (check substantial, moderate, or low based on supporting evidence): Substantial

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

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

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, check 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 ñ 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 [check] 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 Area borders natural forested areas under management by USFS and Plum Creek.

14D. General Fish 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 used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☐ **NA** here and proceed to 14E.) Cold Water

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [check the functional points and rating)

Duration of surface water in AA	Permanent / Perennial						Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S	O	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ◉ **N** ○ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating** .7M

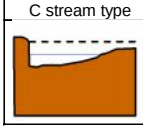
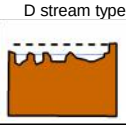
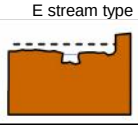
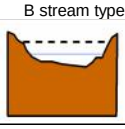
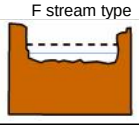
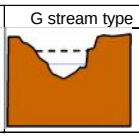
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ○ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

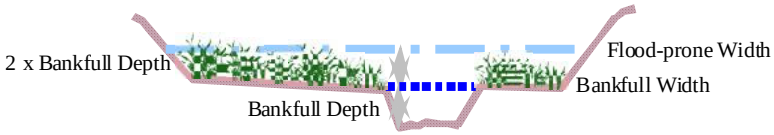
iii. Final Score and Rating: .7 M **Comments:** Perched culvert at Bayhorse Pass Road on northern boundary of the site prevents fish passage at certain times of year.

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, click ☐ **NA** here and proceed to 14F.)

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no 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

Slightly Entrenched ER = >2.2			**Moderately Entrenched ER = 1.41 – 2.2**	**Entrenched ER = 1.0 – 1.4**		
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type
						



Floodprone width 18 **/** **Bankfull width** 6 **=** **Entrenchment ratio** 3

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 (check)? **Y** ◉ **N** ○

Comments: Residence located north of AA, elevated above floodplain and not subject to flooding. Road and culvert located directly downstream.

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

i. Rating (Working from top to bottom, use the matrix below to arrive at [check] 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 ñ **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: Greater than 5 acre feet capacity across 18.09 acre wetland.

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, click ☐ **NA** here and proceed to 14H.)

i. Rating (working from top to bottom, use the matrix below to arrive at [check] 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: Area receives surface runoff during precipitation events.

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 [check] 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
ñ **65%**	1H		.7M
35-64%	.7M		.5M
< 35%	.3L	.2L	.1L

Comments: Open water areas are subject to wave action, streambank is subject to erosion. The streambank is well vegetated (reed canarygrass, meadow foxtail) and open water areas have >65% vetetation cover.

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [check])

General Fish Habitat Rating (14D.iii.)	**General Wildlife Habitat Rating (14C.iii.)**		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); 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, S/I, and T/E are as previously defined, and A = "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	1E	.7H	.8H	.5M	.6M	.4M	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7H	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ○ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** 1 E

Comments: AA is well vegetated with high biological activity.

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 [check] the functional points and rating)

	Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*			
Criteria	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	.7M	.4M	.1L
Insufficient Data/Information	NA			

Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [check] 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: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: (check) **Y** ◉ **N** ○ (if 'Yes' continue with the evaluation; if 'No' then click ☐ **NA** here and proceed to the overall summary and rating page)

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

iii. Rating (use the matrix below to arrive at [check] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

Comments:

Public access, no permission required. Signs of hunting observed during 2015 site visit.

General Site Notes

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.3	1	4.98	☐
B. MT Natural Heritage Program Species Habitat	H	1	1	16.6	☐
C. General Wildlife Habitat	E	1	1	16.6	☐
D. General Fish Habitat	M	.7	1	11.62	☐
E. Flood Attenuation	M	.5	1	8.3	☐
F. Short and Long Term Surface Water Storage	H	1	1	16.6	☑
G. Sediment/Nutrient/Toxicant Removal	H	.9	1	14.94	☑
H. Sediment/Shoreline Stabilization	H	1	1	16.6	☐
I. Production Export/Food Chain Support	E	1	1	16.6	☑
J. Groundwater Discharge/Recharge	H	1	1	16.6	☑
K. Uniqueness	M	.4	1	6.64	☐
L. Recreation/Education Potential (bonus points)	H	.2	NA	3.32	☐
Totals:		9	11	149.4	
Percent of Possible Score			**81.82** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise 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**
- ☑ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

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; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING:
(check appropriate category based on the criteria outlined above)

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

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
McGinnis Meadows
Lincoln County, Montana



Photo Point 1 – *Photo 1* **Location:** PP1

Bearing: 250 degrees **Taken in 2010**



Photo Point 1 – *Photo 1* **Location:** PP1

Bearing: 250 degrees **Taken in 2011**



Photo Point 1 – *Photo 1* **Location:** PP1

Bearing: 250 degrees **Taken in 2012**



Photo Point 1 – *Photo 1* **Location:** PP1

Bearing: 250 degrees **Taken in 2013**



Photo Point 1 – *Photo 1* **Location:** PP1

Bearing: 250 degrees **Taken in 2014**



Photo Point 1 – *Photo 1* **Location:** PP1

Bearing: 250 degrees **Taken in 2015**



Photo Point 1 – *Photo 2* **Location:** PP1

Bearing: 270 degrees **Taken in 2010**



Photo Point 1 – *Photo 2* **Location:** PP1

Bearing: 270 degrees **Taken in 2011**



Photo Point 1 – *Photo 2* **Location:** PP1

Bearing: 270 degrees **Taken in 2012**



Photo Point 1 – *Photo 2* **Location:** PP1

Bearing: 270 degrees **Taken in 2013**



Photo Point 1 – *Photo 2* **Location:** PP1

Bearing: 270 degrees **Taken in 2014**



Photo Point 1 – *Photo 2* **Location:** PP1

Bearing: 270 degrees **Taken in 2015**



Photo Point 1 – *Photo 3* **Location:** PP1

Bearing: 300 degrees **Taken in 2010**



Photo Point 1 – *Photo 3* **Location:** PP1

Bearing: 300 degrees **Taken in 2011**



Photo Point 1 – *Photo 3* **Location:** PP1

Bearing: 300 degrees **Taken in 2012**



Photo Point 1 – *Photo 3* **Location:** PP1

Bearing: 300 degrees **Taken in 2013**



Photo Point 1 – *Photo 3* **Location:** PP1

Bearing: 300 degrees **Taken in 2014**



Photo Point 1 – *Photo 3* **Location:** PP1

Bearing: 300 degrees **Taken in 2015**



Photo Point 2 – *Photo 1* **Location:** PP2

Bearing: 85 degrees **Taken in 2010**



Photo Point 2 – *Photo 1* **Location:** PP2

Bearing: 85 degrees **Taken in 2011**



Photo Point 2 – *Photo 1* **Location:** PP2

Bearing: 85 degrees **Taken in 2012**



Photo Point 2 – *Photo 1* **Location:** PP2

Bearing: 85 degrees **Taken in 2013**



Photo Point 2 – *Photo 1* **Location:** PP2

Bearing: 85 degrees **Taken in 2014**



Photo Point 2 – *Photo 1* **Location:** PP2

Bearing: 85 degrees **Taken in 2015**



Photo Point 2 – *Photo 2* **Location:** PP2

Bearing: 110 degrees **Taken in 2010**



Photo Point 2 – *Photo 2* **Location:** PP2

Bearing: 110 degrees **Taken in 2011**



Photo Point 2 – *Photo 2* **Location:** PP2

Bearing: 110 degrees **Taken in 2012**



Photo Point 2 – *Photo 2* **Location:** PP2

Bearing: 110 degrees **Taken in 2013**



Photo Point 2 – *Photo 2* **Location:** PP2

Bearing: 110 degrees **Taken in 2014**



Photo Point 2 – *Photo 2* **Location:** PP2

Bearing: 110 degrees **Taken in 2015**



Photo Point 2 – *Photo 3* **Location:** PP2

Bearing: 140 degrees **Taken in 2010**



Photo Point 2 – *Photo 3* **Location:** PP2

Bearing: 140 degrees **Taken in 2011**



Photo Point 2 – *Photo 3* **Location:** PP2

Bearing: 140 degrees **Taken in 2012**



Photo Point 2 – *Photo 3* **Location:** PP2

Bearing: 140 degrees **Taken in 2013**



Photo Point 1 – *Photo 3* **Location:** PP2

Bearing: 140 degrees **Taken in 2014**



Photo Point 1 – *Photo 3* **Location:** PP2

Bearing: 140 degrees **Taken in 2015**



Photo Point 2 – *Photo 4* **Location:** PP2

Bearing: 180 degrees **Taken in 2010**



Photo Point 2 – *Photo 4* **Location:** PP2

Bearing: 180 degrees **Taken in 2011**



Photo Point 2 – *Photo 4* **Location:** PP2

Bearing: 180 degrees **Taken in 2012**



Photo Point 2 – *Photo 4* **Location:** PP2

Bearing: 180 degrees **Taken in 2013**



Photo Point 2 – *Photo 4* **Location:** PP2

Bearing: 180 degrees **Taken in 2014**



Photo Point 2 – *Photo 4* **Location:** PP2

Bearing: 180 degrees **Taken in 2015**



Photo Point 3 – *Panorama* **Location:** PP3

Bearing: 300-10 degrees **Taken in 2010**



Photo Point 3 – *Panorama* **Location:** PP3

Bearing: 300-10 degrees **Taken in 2012**



Photo Point 3 – *Panorama* **Location:** PP3

Bearing: 300-10 degrees **Taken in 2013**



Photo Point 3 – *Panorama* **Location:** PP3

Bearing: 300-10 degrees **Taken in 2014**



Photo Point 3 – *Panorama* **Location:** PP3

Bearing: 300-10 degrees **Taken in 2015**



Photo Point 4 – *Panorama* **Location:** PP4

Bearing: 310-90 degrees **Taken in 2010**



Photo Point 4 – *Pamorama* **Location:** PP4

Bearing: 310-90 degrees **Taken in 2012**



Photo Point 4 – *Panorama* **Location:** PP4

Bearing: 310-90 degrees **Taken in 2013**



Photo Point 4 – *Pamorama* **Location:** PP4

Bearing: 310-90 degrees **Taken in 2014**



Photo Point 4 – *Pamorama* **Location:** PP4

Bearing: 310-90 degrees **Taken in 2015**



Photo Point 5 – *Panorama* **Location:** PP5

Bearing: 80-180 degrees **Taken in 2010**



Photo Point 5 – *Panorama* **Location:** PP5

Bearing: 80-180 degrees **Taken in 2012**



Photo Point 5 – *Panorama* **Location:** PP5

Bearing: 80-180 degrees **Taken in 2013**



Photo Point 5 – *Panorama* **Location:** PP5

Bearing: 80-180 degrees **Taken in 2014**



Photo Point 5 – *Panorama* **Location:** PP5

Bearing: 80-180 degrees **Taken in 2015**



Photo Point 6 – *Panorama* **Location:** PP6

Bearing: 180-260 degrees **Taken in 2010**



Photo Point 6 – *Panorama* **Location:** PP6

Bearing: 180-260 degrees **Taken in 2012**



Photo Point 6 – *Panorama* **Location:** PP6

Bearing: 180-260 degrees **Taken in 2013**



Photo Point 6 – *Panorama* **Location:** PP6

Bearing: 180-260 degrees **Taken in 2014**



Photo Point 6 – *Panorama* **Location:** PP6

Bearing: 180-260 degrees **Taken in 2015**



Photo Point 7 – *Panorama* **Location:** PP7

Bearing: 180-240 degrees **Taken in 2010**



Photo Point 7 – *Panorama* **Location:** PP7

Bearing: 180-240 degrees **Taken in 2012**



Photo Point 7 – *Panorama* **Location:** PP7

Bearing: 180-240 degrees **Taken in 2013**



Photo Point 7 – *Panorama* **Location:** PP7

Bearing: 180-240 degrees **Taken in 2014**



Photo Point 7 – *Panorama* **Location:** PP7

Bearing: 180-240 degrees **Taken in 2015**



Transect 1 – *Start* **Location:** T-1

Bearing: 330 degrees **Taken in 2010**



Transect 1 – *Start* **Location:** T-1

Bearing: 330 degrees **Taken in 2011**



Transect 1 – *Start* **Location:** T-1

Bearing: 330 degrees **Taken in 2012**



Transect 1 – *Start* **Location:** T-1

Bearing: 320 degrees **Taken in 2013**



Transect 1 – *Start* **Location:** T-1

Bearing: 330 degrees **Taken in 2014**



Transect 1 – *Start* **Location:** T-1

Bearing: 330 degrees **Taken in 2015**



Transect 1 – *Finish* **Location:** T-1

Bearing: 150 degrees **Taken in 2010**



Transect 1 – *Finish* **Location:** T-1

Bearing: 150 degrees **Taken in 2011**



Transect 1 – *Finish* **Location:** T-1

Bearing: 150 degrees **Taken in 2012**



Transect 1 – *Finish* **Location:** T-1

Bearing: 140 degrees **Taken in 2013**



Transect 1 – *Finish* **Location:** T-1

Bearing: 150 degrees **Taken in 2014**



Transect 1 – *Finish* **Location:** T-1

Bearing: 150 degrees **Taken in 2015**



Transect 2 – *Start* **Location:** T-2

Bearing: 0 Degrees **Taken in 2010**



Transect 2 – *Start* **Location:** T-2

Bearing: 0 Degrees **Taken in 2011**



Transect 2 – *Start* **Location:** T-2

Bearing: 0 Degrees **Taken in 2012**



Transect 2 – *Start* **Location:** T-2

Bearing: 330 Degrees **Taken in 2013**



Transect 2 – *Start* **Location:** T-2

Bearing: 0 Degrees **Taken in 2014**



Transect 2 – *Start* **Location:** T-2

Bearing: 0 Degrees **Taken in 2015**



Transect 2 – *Finish* **Location:** T-2

Bearing: 180 Degrees **Taken in 2010**



Transect 2 – *Finish* **Location:** T-2

Bearing: 180 Degrees **Taken in 2011**



Transect 2 – *Finish* **Location:** T-2

Bearing: 180 Degrees **Taken in 2012**



Transect 2 – *Finish* **Location:** T-2

Bearing: 150 Degrees **Taken in 2013**



Transect 2 – *Finish* **Location:** T-2

Bearing: 180 Degrees **Taken in 2014**



Transect 2 – *Finish* **Location:** T-2

Bearing: 180 Degrees **Taken in 2015**



Cross-Section 1 – *Photo 1* **Location:** XS-1 downstream

Bearing: 275 degrees **Taken in 2010**



Cross-Section 1 – *Photo 1* **Location:** XS-1 downstream

Bearing: 275 degrees **Taken in 2011**



Cross-Section 1 – *Photo 1* **Location:** XS-1 downstream

Bearing: 275 degrees **Taken in 2012**



Cross-Section 1 – *Photo 1* **Location:** XS-1 downstream

Bearing: 275 degrees **Taken in 2013**



Cross-Section 1 – *Photo 1* **Location:** XS-1 downstream

Bearing: 275 degrees **Taken in 2014**



Cross-Section 1 – *Photo 1* **Location:** XS-1 downstream

Bearing: 275 degrees **Taken in 2015**



Cross-Section 1 – *Photo 2* **Location:** XS-1 downstream

Bearing: 290 degrees **Taken in 2010**



Cross-Section 1 – *Photo 2* **Location:** XS-1 downstream

Bearing: 290 degrees **Taken in 2011**



Cross-Section 1 – *Photo 2* **Location:** XS-1 downstream

Bearing: 290 degrees **Taken in 2012**



Cross-Section 1 – *Photo 2* **Location:** XS-1 downstream

Bearing: 290 degrees **Taken in 2013**



Cross-Section 1 – *Photo 2* **Location:** XS-1 downstream

Bearing: 290 degrees **Taken in 2014**



Cross-Section 1 – *Photo 2* **Location:** XS-1 downstream

Bearing: 290 degrees **Taken in 2015**



Cross-Section 1 – *Photo 3*

Location: XS-1 upstream

Bearing: 110 Degrees

Taken in 2010



Cross-Section 1 – *Photo 3*

Location: XS-1 upstream

Bearing: 110 Degrees

Taken in 2011



Cross-Section 1 – *Photo 3*

Location: XS-1 upstream

Bearing: 110 Degrees

Taken in 2012



Cross-Section 1 – *Photo 3*

Location: XS-1 upstream

Bearing: 150 Degrees

Taken in 2013



Cross-Section 1 – *Photo 3*

Location: XS-1 upstream

Bearing: 110 Degrees

Taken in 2014



Cross-Section 1 – *Photo 3*

Location: XS-1 upstream

Bearing: 110 Degrees

Taken in 2015



Cross-Section 2: *Photo 1*

Location: XS-2 upstream

Bearing: 70 Degrees

Taken in 2010



Cross-Section 2: *Photo 1*

Location: XS-2 upstream

Bearing: 70 Degrees

Taken in 2011



Cross-Section 2: *Photo 1*

Location: XS-2 upstream

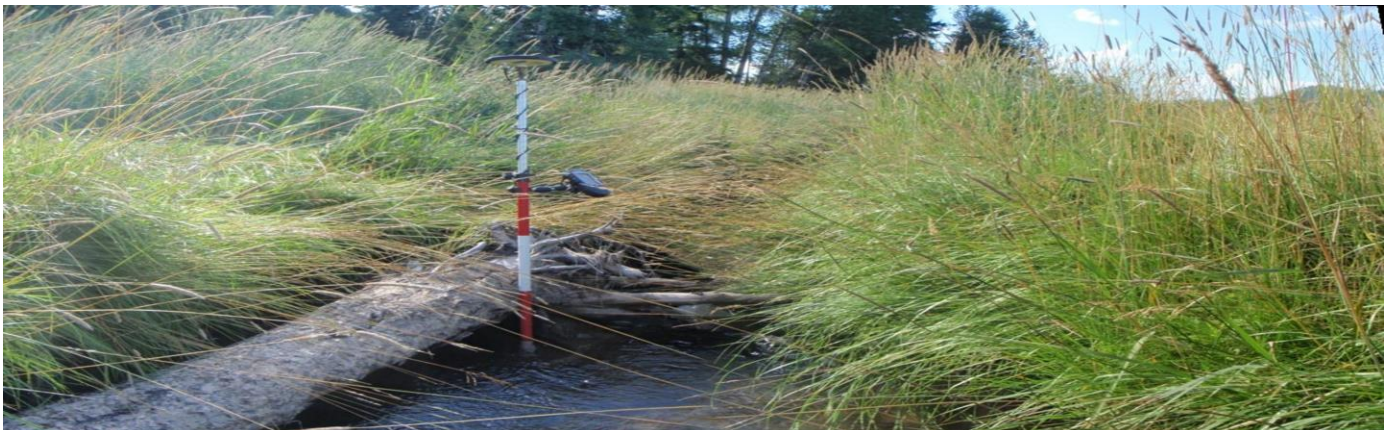
Bearing: 70 Degrees

Taken in 2012



Cross-Section 2: *Photo 1* **Location:** XS-2 upstream

Bearing: 165 Degrees **Taken in 2013**



Cross-Section 2: *Photo 1* **Location:** XS-2 upstream

Bearing: 70 Degrees **Taken in 2014**



Cross-Section 2: *Photo 1* **Location:** XS-2 upstream

Bearing: 70 Degrees **Taken in 2015**



Cross-Section 2: *Photo 2* **Location:** XS-2 downstream

Bearing: 350 Degrees **Taken in 2010**



Cross-Section 2: *Photo 2* **Location:** XS-2 downstream

Bearing: 350 Degrees **Taken in 2011**



Cross-Section 2: *Photo 2* **Location:** XS-2 downstream

Bearing: 350 Degrees **Taken in 2012**



Cross-Section 2: *Photo 2* **Location:** XS-2 downstream

Bearing: 350 Degrees **Taken in 2013**



Cross-Section 2: *Photo 2* **Location:** XS-2 downstream

Bearing: 350 Degrees **Taken in 2014**



Cross-Section 2: *Photo 1* **Location:** XS-2 upstream

Bearing: 70 Degrees **Taken in 2015**



Cross-Section 3: *Photo 1* **Location:** XS-3 upstream

Bearing: 270 Degrees **Taken in 2010**



Cross-Section 3: *Photo 1* **Location:** XS-3 upstream

Bearing: 270 Degrees **Taken in 2011**



Cross-Section 3: *Photo 1* **Location:** XS-3 upstream

Bearing: 270 Degrees **Taken in 2012**



Cross-Section 3: *Photo 1* **Location:** XS-3 upstream

Bearing: 260 Degrees **Taken in 2013**



Cross-Section 3: *Photo 1* **Location:** XS-3 upstream

Bearing: 270 Degrees **Taken in 2014**



Cross-Section 3: *Photo 1* **Location:** XS-3 upstream

Bearing: 70 Degrees **Taken in 2015**



Cross-Section 3: *Photo 2* **Location:** XS-3 downstream

Bearing: 90 Degrees **Taken in 2010**



Cross-Section 3: *Photo 2* **Location:** XS-3 downstream

Bearing: 90 Degrees **Taken in 2011**



Cross-Section 3: *Photo 2* **Location:** XS-3 downstream

Bearing: 90 Degrees **Taken in 2012**



Cross-Section 3: *Photo 2* **Location:** XS-3 downstream

Bearing: 90 Degrees **Taken in 2013**



Cross-Section 3: *Photo 2* **Location:** XS-3 downstream

Bearing: 90 Degrees **Taken in 2014**



Cross-Section 3: *Photo 2* **Location:** XS-3 downstream

Bearing: 90 Degrees **Taken in 2015**



Data Point TPA-up **Location:** Community 14

Bearing: 180 Degrees **Taken in 2014**



Data Point TP A-wet **Location:** Community 7

Bearing: 0 Degrees **Taken in 2014**



Data Point TPB-up **Location:** Community 1

Bearing: 0 Degrees **Taken in 2014**



Data Point TPB-wet **Location:** Community 18

Bearing: 180 Degrees **Taken in 2014**



Data Point SP-01 wet **Location:** Community 2

Bearing 270 Degrees **Taken in 2015**



Data Point SP-02 up **Location:** Community 4

Bearing 270 Degrees **Taken in 2015**

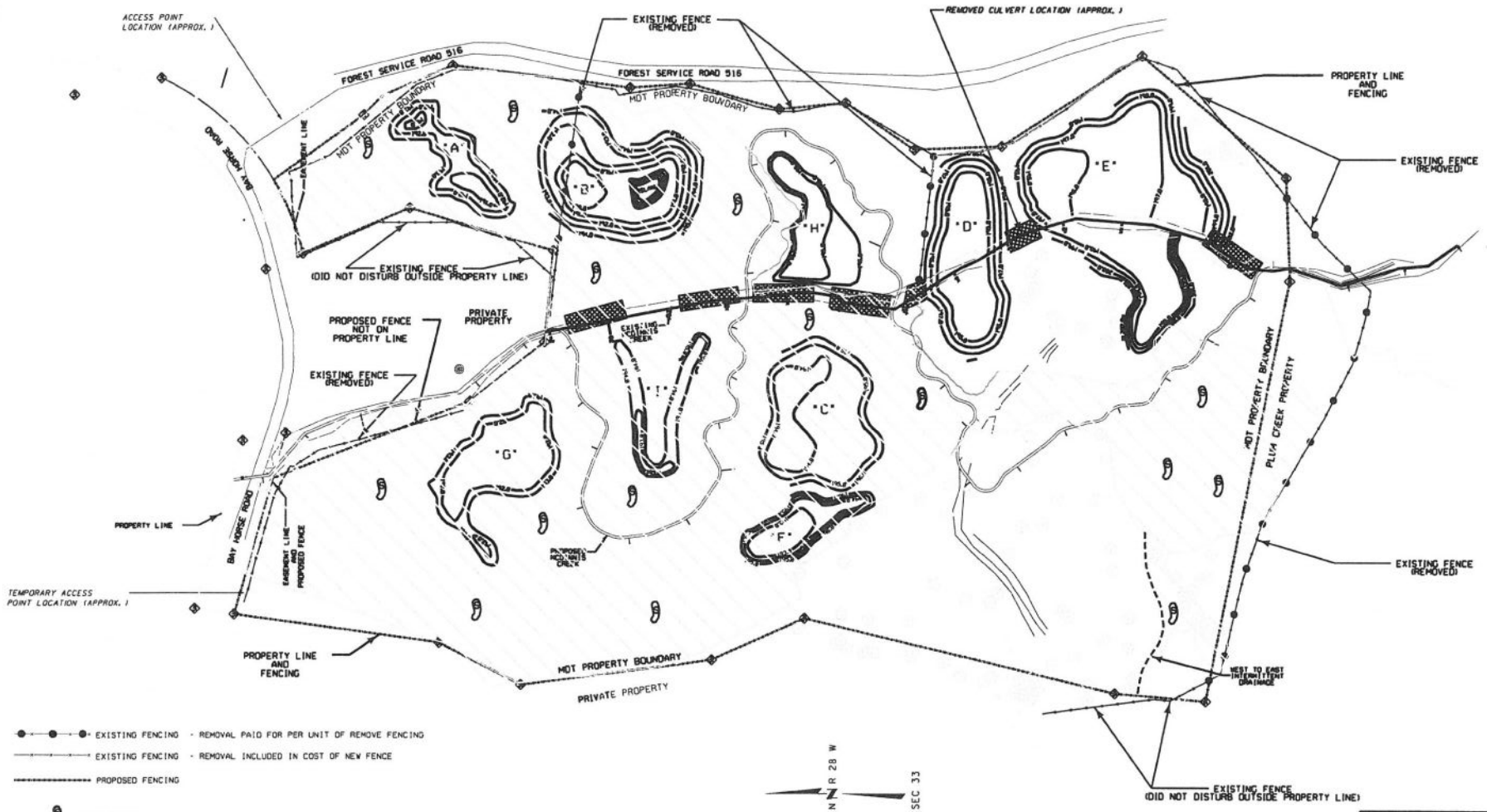
Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring
McGinnis Meadows
Lincoln County, Montana

AS-BUILTS DATE SENSITIVE - FOR INFORMATION ONLY

05/14/2010
Highways & Engineering Division



SITE PLAN
for
McGINNIS CREEK
WETLAND MITIGATION

NO SCALE

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\4143rddet002ab.dgn	DESIGNED BY MARK FRENCH	10/25/2008	WETLAND MITIGATION	McGINNIS MEADOWS - WETLAND MITIGATION	NH 27 (17)
2		5/14/2010	REVIEWED BY				
1		10:36:59 AM CP6 - U4853	CHECKED BY		LINCOLN COUNTY	UPN 4143	SHEET 5 OF 21

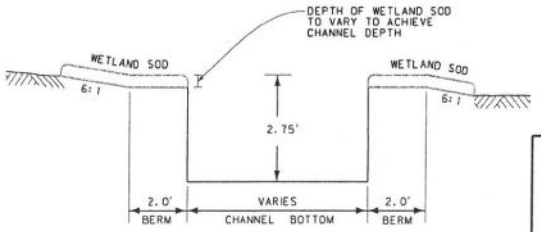
AS-BUILTS DATE SENSITIVE - FOR INFORMATION ONLY

05/14/2010
Highways & Engineering Division



PROPOSED CURVE/STREAM ℄ LAYOUT DATA

PI STATION	POINT OF INTERSECTION (PI) COORDINATES X	Y	POINT OF CURVATURE (PC) COORDINATES X	Y	POINT OF TANGENCY (PT) COORDINATES X	Y	RADIUS OF CURVE (FT)
8+05.00 P.O.T.	1076.1720	670.1733	BEGINING OF PROPOSED MCGINNIS STREAM				
8+53.65	1077.3920	718.0812	1076.9184	699.9236	1059.3635	724.4188	25.000
9+01.56	1076.4718	734.6678	1034.3349	732.2177	1021.6046	741.3118	25.000
9+33.07	1007.5700	760.4700	1015.0637	751.9234	998.3493	767.1168	100.000
9+73.16	974.9700	783.9700	980.1294	780.2508	972.2152	789.7027	25.000
9+92.56	966.4500	801.7000	970.2457	793.8013	958.5535	805.5002	25.000
10+31.45	930.8063	818.6534	934.8857	816.9288	927.7139	822.0371	25.000
10+58.06	910.8100	839.4400	917.9029	832.1377	910.8359	849.6200	25.000
10+82.67	918.8731	864.2700	918.8365	849.8526	898.4824	871.5266	25.000
11+50.26	851.8632	898.8183	861.6653	892.7246	849.3653	910.9285	25.000
11+96.11	847.4900	946.1900	847.3495	940.9161	845.4876	951.0709	25.000
12+12.81	841.8900	961.7900	843.5873	955.7027	835.9196	965.8592	25.000
12+36.06	822.5900	976.3500	830.5221	970.1872	821.2162	986.3502	25.000
12+59.53	819.2600	1000.5900	819.5751	998.2961	818.5289	1002.7870	25.000
13+03.48	800.4300	1043.1700	810.8440	1031.1476	799.6929	1051.7239	40.000
13+33.12	786.7900	1064.4800	792.0279	1059.3219	782.3627	1070.3486	100.000
13+82.06	757.3000	1103.5700	758.0824	1102.6390	756.6195	1104.5172	100.000
14+25.26	732.8972	1138.6498	735.1481	1134.4144	727.6147	1141.3154	25.000
14+79.21	685.6000	1166.3000	716.6962	1147.8882	713.8938	1188.8473	25.000
15+45.85	756.5212	1222.8249	734.9699	1205.6419	702.5697	1213.7593	50.000
15+95.04	687.4700	1285.0900	681.4898	1207.1723	811.7382	1200.4113	25.000
16+42.45	839.5960	1169.8743	817.2117	1194.4114	850.8122	1281.1365	20.000
16+77.84	860.0833	1226.9772	856.2454	1216.2800	870.6668	1231.1186	25.000
17+08.74	890.1684	1238.7465	875.5691	1233.0369	891.3829	1254.3674	25.000
17+55.68	894.0835	1288.8758	891.8408	1260.2185	922.1522	1282.6805	25.000
18+05.67	957.2890	1274.9262	937.8485	1279.2165	965.8228	1292.9128	25.000
18+65.57	985.6225	1334.6445	975.7263	1313.7863	1007.2818	1326.4367	25.000
19+32.78	1056.6742	1387.6187	1038.6841	1314.4616	1067.8895	1323.2611	25.000
19+83.87	1089.8026	1353.8241	1078.8442	1337.4243	1108.3141	1345.7906	25.000
20+72.60	1177.3900	1316.6700	1142.8648	1331.3154	1178.3161	1353.4998	20.000
20+93.74	1167.4100	1368.6300	1169.7672	1356.3574	1175.8119	1377.8810	25.000
21+22.83	1188.1900	1391.5100	1182.3564	1385.8868	1196.7486	1392.9380	25.000
21+47.27	1212.9368	1395.6388	1203.4478	1394.8556	1217.6222	1404.8483	20.000
21+61.99	1220.7400	1409.6300	1217.9255	1404.5841	1226.2122	1411.4848	15.000
22+07.80	1264.6300	1424.5800	1241.1962	1416.5606	1272.5328	1447.9462	50.000
22+58.99	1282.1100	1476.3600	1278.2136	1464.8001	1290.8924	1484.8266	50.000
22+90.20	1304.9100	1498.3400	1296.5970	1490.3260	1304.1985	1509.8649	25.000
23+34.82	1302.8700	1544.3400	1303.5385	1536.8818	1297.5922	1550.3222	25.000
23+61.77	1285.6700	1566.2500	1297.1814	1550.8711	1266.4704	1566.8800	40.000
24+04.60	1248.2600	1567.7400	1254.6988	1567.2665	1228.8538	1559.8873	40.000
24+41.95	1209.8400	1544.1300	1221.6472	1553.2940	1195.8693	1538.8188	100.000
24+74.09	1179.5900	1532.6300	1182.3437	1533.6769	1176.7324	1531.9137	50.000
25+01.97	1152.5400	1525.8500	1166.4410	1529.3342	1142.5087	1536.0847	25.000
25+24.70	1134.7800	1543.9700	1138.5313	1540.1427	1138.3028	1546.9154	50.000
25+59.09	1106.8200	1562.8900	1112.9896	1558.3050	1097.9393	1564.9639	50.000
25+95.06	1071.8300	1571.8700	1074.9986	1570.8515	1066.9439	1571.5684	25.000
26+37.51	1026.6200	1568.7400	1032.3684	1569.8161	1024.8803	1569.0250	50.000
26+71.45	994.7700	1571.3200	1008.9338	1570.2485	988.4471	1584.8481	25.000
27+07.78	977.4517	1606.1598	985.9169	1589.1301	962.8626	1593.9603	15.000
27+69.48	921.7197	1559.5563	943.7976	1578.8180	906.5275	1583.9995	25.000
28+17.74	888.4426	1613.8967	904.5436	1567.1914	866.2021	1592.2235	25.000
28+79.18	821.3954	1559.5563	863.4316	1569.6231	821.9122	1562.4561	25.000
29+37.48	811.2165	1650.8415	818.6816	1617.4328	781.6328	1633.6532	25.000
30+04.94	734.3459	1606.1806	747.7851	1613.9886	721.3975	1614.7780	25.000
30+85.58	664.4366	1652.5983	689.3589	1636.8507	652.6961	1680.1138	100.000
31+66.48	632.8220	1720.5664	634.7746	1722.1154	631.1506	1735.5258	50.000
32+20.25	625.3300	1762.0100	627.8336	1768.4051	638.8044	1794.5808	50.000
32+62.67	642.6100	1821.6900	635.8528	1804.3347	659.7667	1829.6865	50.000
33+15.23	691.5800	1844.5200	673.8178	1835.8662	718.8742	1837.6655	50.000
33+85.07	759.3500	1820.4500	755.3734	1821.8624	763.1935	1818.7076	100.000
34+48.59	817.2100	1794.2200	798.7822	1802.5748	829.2219	1810.5814	25.000
35+15.89	860.9939	1853.5664	845.2885	1832.2786	887.4290	1852.5581	50.000
35+83.45	932.7400	1850.8300	924.9475	1851.1272	939.3195	1855.8158	25.000
36+37.27	978.5600	1879.9800	961.1789	1868.9173	971.8173	1899.1600	25.000
36+51.14 P.O.T.	971.8173	1899.1600	END OF PROPOSED MCGINNIS STREAM				



TYPICAL X-SECTION OF PROPOSED STREAM CHANNEL

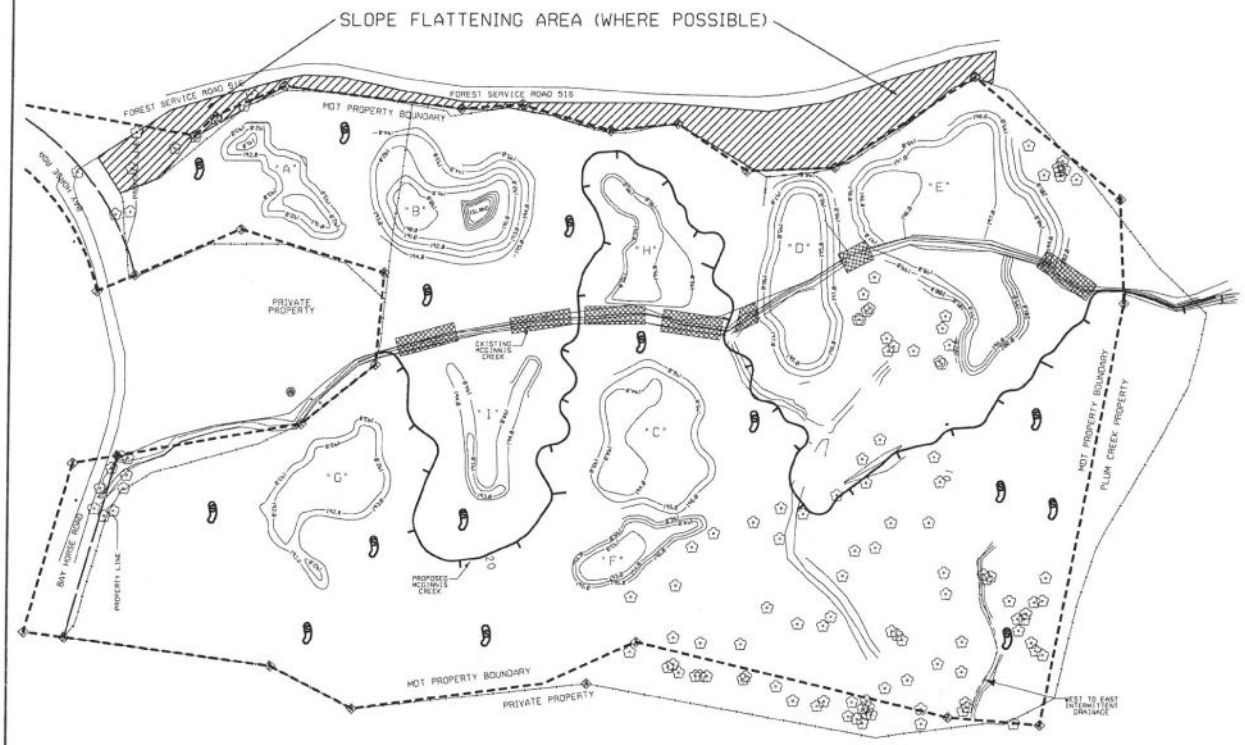
PROPOSED CHANNEL for McGINNIS CREEK

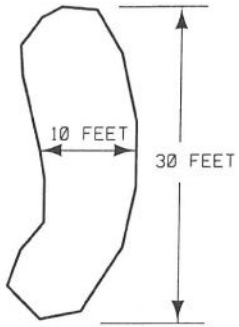
ALIGNMENT COORDINATE TABLE

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\4143rdde502ab.dgn	DESIGNED BY MARK FRENCH	10/25/2008	WETLAND MITIGATION	McGINNIS MEADOWS - WETLAND MITIGATION	NH 27 (17)
2		5/14/2010	REVIEWED BY				
1		10:37:03 AM CPS - U4853	CHECKED BY		LINCOLN COUNTY	UPN 4143	SHEET 7 OF 21

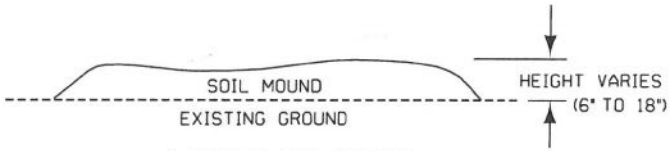
AS-BUILTS DATE SENSITIVE - FOR INFORMATION ONLY

05/14/2010
Highways & Engineering Division



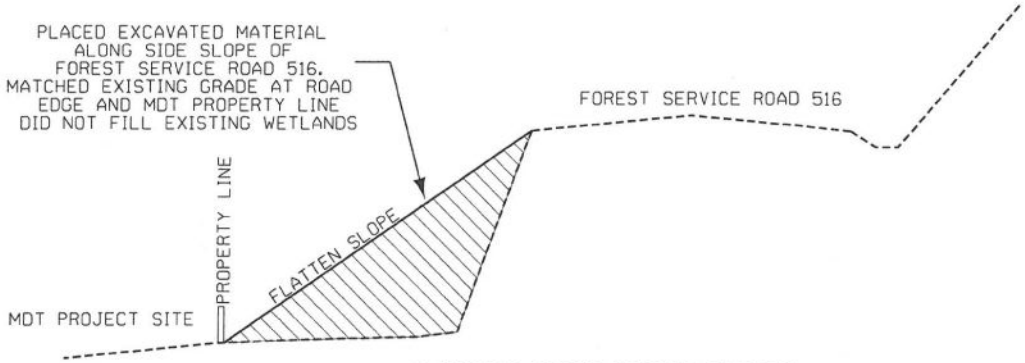


PLAN VIEW OF SOIL MOUNDS



X-SECT OF SOIL MOUNDS

PRECISE LOCATIONS AND HEIGHT OF SOIL MOUNDS
WAS MARKED IN THE FIELD BY
MDT STAFF BOTANIST



X-SECT OF FOREST SERVICE ROAD 516

DETAIL
SOIL MOUNDS
(1 OF 1)

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\4143rddet00tab.dgn	DESIGNED BY	R. SALYARDS	02/06/09	WETLAND MITIGATION	McGINNIS MEADOWS - WETLAND MITIGATION	NH 27 (17)
2	serving you with pride	5/14/2010	REVIEWED BY			LINCOLN COUNTY	UPN 4143	SHEET 17 OF 21
1		10:37:40 AM CPS - U4853	CHECKED BY					