MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2014

Easton Ranch
Park County, Montana

Prepared for:

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December 2014

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WETLAND MITIGATION MONITORING REPORT:

YEAR 2014

Easton Ranch
Park County, Montana
Constructed: 2009

MDT Project Number STPX-0034(14)
Control Number 4866

MFWP: SPA MDT R3-56-2008
USACE: NWO-2006-90370-MTB

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CCI Project No: MDT.006

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Cover: View looking southeast across wetland community Type 7 at the Easton Wetland Mitigation Site.

1. INTRODUCTION

The 2014 Easton Ranch Wetland Mitigation Monitoring Report presents the results of the fifth year of post-construction monitoring at the Easton Ranch mitigation area. This Montana Department of Transportation (MDT) wetland mitigation site is located within Watershed 13 – Upper Yellowstone River Basin. Wetlands were developed at this location to provide compensatory mitigation for wetland impacts associated with transportation projects in the Butte District. The Easton Ranch site was selected after an extensive search of potential wetland and stream restoration sites by MDT within the Shields River Valley in cooperation with personnel from the Park Conservation District and the US Department of Agriculture (USDA) Natural Resource Conservation Service Center (NRCS) in Livingston. Figures 2 and 3 in Appendix A show the site Monitoring Activity Locations and Mapped Site Features, respectively. The MDT Mitigation Site Monitoring Form, US Army Corps of Engineers (USACE) Wetland Determination Data Forms, and the 2008 MDT Montana Wetland Assessment Forms are included in Appendix B. Project area photographs are included in Appendix C and the Project Plan Sheet is included in Appendix D.

The Easton Ranch wetland mitigation site encompasses approximately 34 fenced acres within a conservation easement area located east of the Shields River within the boundaries of the larger Easton Family Ranch, the previous landowner. The wetland mitigation project at the Easton Ranch is located in the northwest quarter of Section 32, Township 4 North, Range 9 East, Park County, Montana. The site is located approximately three miles east of US Highway 89 and four miles northeast of Wilsall (Figure 1).

Construction entailed the excavation of a series of wetland cells and a flood channel that bisects the 34-acre mitigation area. The primary source of wetland hydrology is groundwater supplemented by surface water from high flows associated with the Shields River. An existing irrigation diversion and delivery system was maintained to provide supplemental water to the eastern portion of the site in a flow through system. Revegetation tasks included planting cuttings and containerized shrubs, seeding wetland herbaceous species within the excavated wetland areas, and transplanting wetland plants and soils from existing wetlands to excavated areas. The wetland project was designed to increase flood storage, improve wildlife habitat, and restore riparian and wetland habitat impacted by past agricultural practices within the Shields River watershed. The project objectives include:

- Re-establish a previously existing, relic floodplain channel and associated riparian and floodplain wetland areas totaling 1.56 acres;

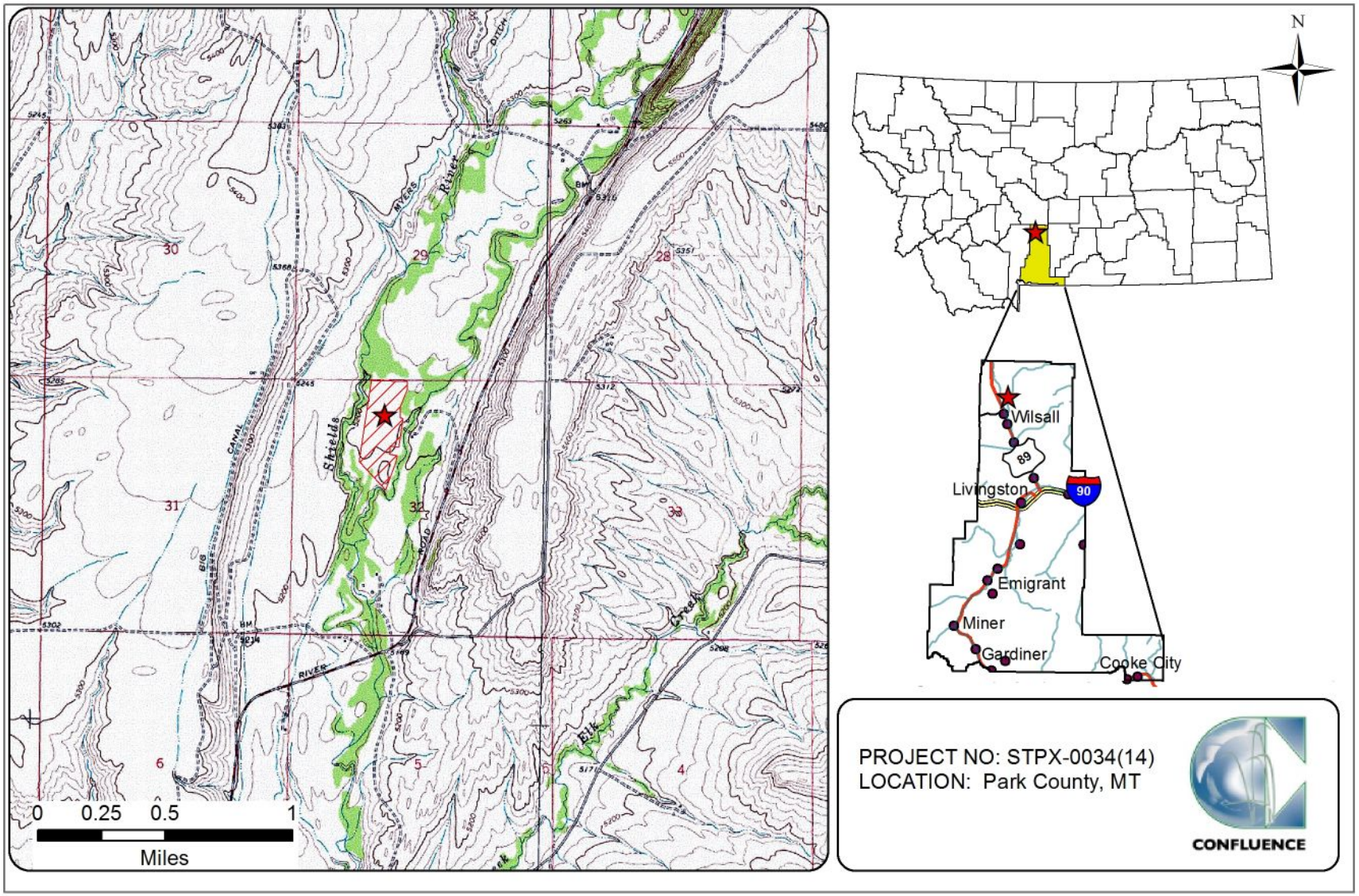

Figure 1. Project location of Easton Ranch Wetland Mitigation Site.

- Create approximately 25 acres of emergent, scrub/shrub and riparian wetlands by replacing existing hay fields with a variety of wetland communities that mimic habitats found in bio-referenced wetland areas located north and south of the project;
- Preserve 1.1 acres of existing scrub/shrub, forested, and palustrine emergent communities at several locations within the project area;
- Mimic old meander scars and relic flood channels within the wetland mitigation site;
- Improve water storage capacity and increase the amount of floodplain area across the site;
- Increase the amount of wildlife habitat in this reach of the Shields River.

The project credit ratios approved by the USACE are shown in Table 1.

Table 1. Wetland Credit Determination for the Easton Ranch Wetland Mitigation Site.

Proposed Mitigation Features	Compensatory Mitigation Type	USACE Mitigation Ratios	Acres	Final Credit Estimate (Acres)
Creation of palustrine emergent wetland via shallow excavation.	Creation	1:1	24.95	24.95
Re-establishment of relic flood channel.	Restoration (Re-establishment)	1:1	1.56	1.56
Preservation of existing shrub/scrub and palustrine emergent wetland.	Preservation	4:1	1.10	0.275
Establish a 50-foot wide upland buffer.	Upland Buffer	5:1	6.43	1.29
Project Impacts	Debit	--	--	(0.67)
Total	**Total**			27.41

The USACE approved performance standards are listed below.

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 Wetland Delineation Manual* (Environmental Laboratory 1987) and the *2010 Regional Supplement to the Corps of Engineers Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010).
    a) **Wetland Hydrology Success** will be achieved where wetland hydrology is present as per the technical guidelines in the 1987 Manual and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual.
        (i) Soil saturation will be present for at least 12.5 percent of the growing season.

(ii) Groundwater wells will be left undisturbed within the site for the purpose of monitoring groundwater elevations during the growing season.

(iii) Depressional wetlands excavated into the upland areas will be monitored to determine if groundwater hydrology is filling sites and establishing vegetation communities.

(iv) Hydrologic success will also require that the constructed stream channel be stable in the wetlands.

b) **Hydric Soil Success** will be achieved where hydric soil conditions are present (per the most recent Natural Resource Conservation Service (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 sampling will be conducted during the course of the monitoring period to determine if wetland areas are exhibiting characteristics of hydric soils per the 1987 Wetland Manual. 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 is achieved.

c) **Hydrophytic Vegetation Success** will be achieved through the delineation of developing wetlands utilizing the technical guidelines established in the 1987 Wetland Manual and the 2010 Regional Supplement. The following concept of "dominance", as defined in the 1987 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** – Trees and shrubs are to be installed at various locations to provide structural diversity within the site at the direction of the MDT Reclamation Specialist. Survival of woody plant species planted within the site will be evaluated to determine survival rates and success of the planting each year of the monitoring period. Success of these planted species will be determined by stem counts each year to determine survival rates of the various planted woody species and will also include the evaluation of naturally recruited woody plant species within the site. *"Scrub/shrub wetland habitat will be achieved where 30 percent absolute cover by cuttings, planted and volunteer woody plants is reached within the defined monitoring period or the site is showing signs of progression (e.g. by approximating stem densities and estimating future canopy coverage, or using other appropriate methods) towards that goal at the end of the defined monitoring period."*

ii. **Herbaceous Plants** – At the conclusion of the monitoring period, ocular coverage of desirable hydrophytic vegetation (wetland plants listed as OBL, FACW and FAC) will be at least 80 percent. A wetland seed mix was prepared for this site that included tufted hairgrass (*Deschampsia caespitosa*), Northwest Territory sedge (*Carex utriculata*), Baltic rush (*Juncus balticus*), American sloughgrass (*Beckmannia syzigachne*), American mannagrass (*Glyceria grandis*), and bluejoint reedgrass (*Calamagrostis canadensis*).

2. **Wetland Acreage Development** will provide 27.41 net credit acres for the project site (Table 1 and Project Plan Sheet, Appendix D).
    a) Emergent wetlands will comprise approximately 70 to 75 percent of the site.
    b) Scrub/shrub wetland and riparian areas will comprise 15 to 20 percent of the site primarily along the proposed stream corridor and between created wetlands.
    c) Open water will comprise approximately less than 5 percent of the total wetland area within the site after final monitoring.

3. **Floodplain Channel Restoration Success** will be evaluated in terms of revegetation and bank stability success.
    a) The floodplain channel corridor will be considered stable when banks are vegetated with a majority of deep-rooting riparian and wetland plant species.
    b) Bank pins will be established at appropriate locations along the new relic floodplain channel to monitor channel stability and to measure channel movement.
    c) Bank stability success will be evaluated by utilizing the bio-reference reaches to the north and south of the project area as comparisons due to their relatively undisturbed and vegetated mixture of woody and herbaceous riparian and wetland plant species.
    d) Vegetation transects will be monitored along the relic floodplain channel corridor to determine root stability indices of the riparian and wetland plant species as it develops.

4. **Bank Stabilization Success** along the Shields River in the northwestern corner of the site will be evaluated in terms of revegetation and bank stability success.
    a) Bank stability will be achieved when the banks are vegetated with a majority of deep-rooting riparian and wetland plant species.
    b) This area will be visually inspected and photo documented for incorporation into the annual monitoring reports to outline the success of the bank stabilization.

c) If annual monitoring determines that the banks are eroding, the USACE and Fish, Wildlife, and Parks (FWP) will be contacted to coordinate a field meeting for joint evaluation and consultation on remediation.

5. **Upland Buffer Success** will be achieved when noxious weeds do not exceed 10 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.

6. **Weed Control** will be based upon annual monitoring of the site to determine weed species and degree of infestation within the site, and 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 will manage the wetland conservation easement area to meet a goal of having less than 5 percent absolute cover of state listed noxious weed species across the site.

7. **Fencing** of the proposed mitigation site has been installed along the easement boundaries to protect the integrity of the wetland from disturbance that may be detrimental to the site. Fencing installed along the perimeter of the site has been designed to be "wildlife friendly" to allow for wildlife movement into and out of the wetland complex.

8. **Monitoring** of this MDT mitigation site will be based upon the MDT standard monitoring protocols utilized for all MDT wetland mitigation sites for a minimum period of five years or longer as determined by the US Army Corps, Montana Regulatory Office's review of annual monitoring reports for the site and whether or not the site has met the wetland success criteria.

2. METHODS

The fifth year of monitoring was completed on July 1, 2014. Information for the Mitigation Monitoring Form and Wetland Determination Data Form was entered in the field on an electronic tablet during the field investigation (Appendix B). Monitoring activity sites were located with a global positioning system (GPS) as shown on Figure 2 (Appendix A). Information collected included a wetland delineation, vegetation community mapping, vegetation transect monitoring, soil and hydrology data collection, bird and wildlife use documentation, photographic documentation, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

The presence of hydrological indicators as outlined on the Wetland Determination Data Form was assessed at four data points established within the project area. The hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on the electronic Wetland

Determination Data Form (Appendix B). Hydrologic assessments allow evaluation of mitigation criteria addressing inundation/saturation requirements.

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 (12.5 percent of the growing season) during the growing season" (USACE 2010). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered jurisdictional wetlands. The growing season is defined for purposes of this report as the number of days when there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit (Environmental Laboratory 1987). Temperature data recorded for the meteorological station at Wilsall 8 ENE, Montana (249023) has a median (5 years in 10) growing season length of 120 days. Areas defined as wetlands would require 15 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria. Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data were recorded on the Wetland Determination Data Form (Appendix B).

2.2. Vegetation

The boundaries of the dominant vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2014 aerial photograph. Percent cover of dominant species within a community type was visually estimated and recorded using the following classes: 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). Community types were named based on the dominant vegetation species that characterized each mapped polygon (Figure 3, Appendix A).

Temporal changes in vegetation were evaluated through annual assessments of static belt transects established in June, 2010 (Figure 2, Appendix A). Vegetation composition was assessed and recorded along three vegetation belt transects (T-1, T-2, T-3) approximately 10 feet wide and 1376, 1333, and 751 feet long, respectively (Figure 2, Appendix A). Transects T-2 and T-3 traverse the floodplain channel corridor and banks to provide an assessment of root stability indices of the developing riparian and wetland plant species (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 values and cover ranges used for the polygon data on the 2014 aerial photograph (Figure 3, Appendix B). Photographs were taken at the endpoints of each transect during the monitoring event (Appendix C).

The survival of woody species planted onsite was recorded during monitoring. Survival rates are evaluated annually. Additionally, natural recruitment of woody species will be noted. The Montana State Noxious Weed List (December 2013), prepared by the Montana Department of Agriculture, was used to categorize weeds identified within the site. The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "**x**", "▲", or "■" representing 0 to 0.1 acre, 0.1 to 1 acre, or greater than 1 acre in extent, respectively. Cover classes are represented by T, L, M, or H, for less than 1 percent, 1 to 5 percent, 6 to 25 percent, and 26 to 100 percent, respectively.

2.3. Soil

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

2.4. Wetland Delineation

Waters of the U.S. including special aquatic sites and jurisdictional wetlands were delineated throughout the project area in accordance with criteria established in the 1987 Manual and the 2010 Regional Supplement to the Corps of Engineers 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 and the 2010 Regional Supplement, must be satisfied. The name and indicator status of plant species was derived from the 2014 National Wetland Plant List (NWPL) (Lichvar *et al*. 2014). A Routine Level-2 On-site Determination Method (Environmental Laboratory 1987) was used to delineate jurisdictional areas within the project boundaries. The information was recorded on the Wetland Determination Data Form (Appendix B).

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was classified as an atypical situation, potential problem area, or special aquatic site, i.e., mudflat. The wetland boundary was identified on the 2014 aerial photograph.

Wetland areas were GPS surveyed and calculated using geographic information system (GIS) methods.

2.5. Wildlife

Observations of use by mammal, reptile, amphibian, and bird use were recorded on the Mitigation Monitoring form during the site visit. Indirect use indicators including tracks, scat, burrow, eggshells, skins, and bones were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods such as snap traps, live traps, and pitfall traps, were not used. A comprehensive species list of wildlife observed from 2010 through 2014 during the annual monitoring periods has been compiled.

2.6. Functional Assessment

The 2008 MDT Montana Wetland Assessment Method (Berglund and McEldowney 2008) was used to evaluate functions and values on the site from 2010 to 2014. 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). Field data for this assessment were collected during the site visit. Wetland Assessment Forms were completed for three separate assessment areas (AA) within mitigation site (Appendix B).

2.7. Photo Documentation

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

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2014 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 GPS included fence boundaries, photograph points, transect endpoints, wetland/upland boundaries, and wetland data points.

2.9. Maintenance Needs

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

3. RESULTS

3.1. Hydrology

Climate data from the meteorological station at Wilsall 8 ENE, Montana (249023), recorded an average annual precipitation rate of 20.28 inches from April 1957 to August 2014 (Western Region Climate Center {WRCC} 2010). The recorded annual precipitation rate was 24.15 inches (2010), 18.03 inches (2011), 16.34 inches (2012), and 21.43 inches (2013). This data indicates 2010 and 2013 received above-average precipitation with 2011 and 2012 exhibiting below-average precipitation. The historic precipitation average from January to August was 15.06 inches. The precipitation totals for this same period was 17.56 inches (2010), 13.36 inches (2011), 12.41 inches (2012), 13.41 inches (2013), and 18.14 inches (2014). This data set corroborates that 2010 received above-average precipitation while indicating that precipitation prior to and during the growing season for 2011 through 2013 was below average. Precipitation during the January to August period in 2014 was above-average. The extent of surface water across the site fluctuates seasonally and is moderately driven by direct precipitation and surface runoff. Although precipitation contributes to hydrology within this site, elevated seasonal groundwater levels and overbank flows from the Shields River appear to be the principal contributors to wetland hydrology at this site.

The irrigation diversion system located upgradient of the wetland cells was closed during the 2010, 2011, 2012, 2013, and 2014 investigations. Per MDT communication, the area was flood irrigated in June and July of 2013. Approximately ten percent of the site was inundated with surface water during the 2014 investigation at depths ranging from 0 to 2.0 feet. The average depth was 0.2 feet and the depth at the emergent vegetation/open water boundary was 0.5 feet. Inundated areas were located within the lowest contour of the excavated depressions. Unlike the 2011 monitoring event at this site, which revealed recent scour holes, sediment deposits, wrack lines, water marks, and other signs of contemporary inundation, there have been no signs of overbank flooding from the Shields River or activation of the flood channel since 2011.

Four data points were sampled to determine the wetland/upland boundaries. There were no hydrologic indicators observed at E-1 or E-3. Data points E-2 and E-4 were located in areas that met the wetland criteria. No primary wetland hydrology indicators were observed at wetland data point E-2, which was located within an excavated wetland cell. Positive wetland hydrology indicators at this data point included positive FAC-neutral test and geomorphic position. Positive hydrologic indicators documented at data point E-4, located in an excavated swale near the southern boundary of the site, included saturation within 8 inches of the soil surface. Additional hydrological indicators observed in various wetland areas of the Easton Ranch site included surface water, sparsely vegetated concave surfaces, water stained leaves, algal crust, soil cracks, drift and sediment deposits, and dry season water table. Site wide saturation and inundation levels were similar to those observed in 2011 and 2012, and greater

than what was observed in 2013. Increased saturation and inundation levels in 2014 were likely a result of increased regional precipitation rates prior to the site investigation.

The 2011 spring runoff levels and duration were high as a result of an above-average snowpack in the mountains and above average spring precipitation. The constructed flood channel through the mitigation site was activated for the first time since construction during the early part of the 2011 growing season. Fluvial geomorphic processes resulted in the initial development of scour holes, riffles, and point bars. Surface water was present in the channel during the July 2014 site visit and appeared the result of high groundwater. A few isolated scour pools were observed in the base of the constructed channel. No areas of bank erosion were noted.

3.2. Vegetation

Monitoring year 2014 marked the fifth year of monitoring on the Easton Ranch wetland mitigation site. One hundred and thirty five plant species have been observed site-wide since 2010 (Table 2). Vegetation plant communities were mapped and named by plant composition and dominance. The composition of each community is listed on the Mitigation Monitoring Form (Appendix B). The community boundaries are shown on Figure 3 in Appendix A.

Three upland and five wetland community types were observed on the site in 2014. The upland communities were Type 1 – *Phleum pratense/Poa pratensis*, Type 8 – *Bromus* spp./*Trifolium* spp., and Type 10 – *Bromus inermis/Populus tremuloides* and the wetland communities include Type 3 – *Carex* spp., Type 4 – *Salix drummondiana*, Type 5 – *Populus balsamifera*, Type 7 – Aquatic Macrophytes, and Type 11 – *Juncus* spp.. These communities are discussed below.

Upland community Type 1 – *Phleum pratense/Poa pratensis* was identified on 8.82 acres of higher elevation areas that surround the constructed wetland cells and channel (Figure 3, Appendix A). The community was dominated by herbaceous species including common Timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), caraway (*Carum carvi*), orchard grass (*Dactylis glomerata*), and common dandelion (*Taraxacum officinale*).

Wetland community Type 3 – *Carex* species *(*spp.) encompassed 0.46 acres in the pre-existing emergent wetlands located at the north and southwest boundaries of the site. The community included a diverse mix of wetland species including Northwest Territory sedge (beaked sedge, *Carex utriculata*), leafy tussock sedge (*Carex aquatilis*), lamp rush (*Juncus effusus*), narrow-leaf willow (*Salix exigua*), and red-tinged bulrush (*Scirpus microcarpus*).

Table 2. Vegetation species observed from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

Scientific Names	Common Names	WMVC Indicator Status[1]
Achillea millefolium	Common Yarrow	FACU
Agrostis gigantea	Black Bent	FAC
Agrostis stolonifera	Spreading Bent	FAC
Algae, green	Algae, green	NL
Alisma gramineum	Narrow-Leaf Water-Plantain	OBL
Alnus incana	Speckled Alder	FACW
Alopecurus geniculatus	Marsh Meadow-Foxtail	OBL
Alopecurus pratensis	Field Meadow-Foxtail	FAC
Alyssum alyssoides	Pale Alyssum	NL
Amaranthus retroflexus	Red-Root	FACU
Avena fatua	Wild Oats	NL
Bassia scoparia	Mexican-Fireweed	FAC
Beckmannia syzigachne	American Slough Grass	OBL
Bromus arvensis	Field Brome	UPL
Bromus carinatus	California Brome	NL
Bromus ciliatus	Fringed Brome	FAC
Bromus inermis	Smooth Brome	FAC
Bromus tectorum	Cheatgrass	NL
Calamagrostis canadensis	Bluejoint	FACW
Carduus nutans	Nodding Plumeless-Thistle	UPL
Carex aquatilis	Leafy Tussock Sedge	OBL
Carex nebrascensis	Nebraska Sedge	OBL
Carex praegracilis	Clustered Field Sedge	FACW
Carex rostrata	Swollen Beaked Sedge	OBL
Carex sp.	Sedge	NL
Carex stipata	Stalk-Grain Sedge	OBL
Carex utriculata	Northwest Territory Sedge	OBL
Carex vesicaria	Lesser Bladder Sedge	OBL
Carum carvi	Caraway	FACU
Cassiope mertensiana	Western Moss-Heather	FACU
Chenopodium album	Lamb's-Quarters	FACU
Chenopodium leptophyllum	Narrow-Leaf Goosefoot	FACU
Cirsium arvense	Canadian Thistle	FAC
Cirsium douglasii	Douglas' Thistle	OBL
Cirsium vulgare	Bull Thistle	FACU
Convolvulus arvensis	Field Bindweed	NL
Cornus alba	Red Osier	FACW
Cynoglossum officinale	Gypsy-Flower	FACU
Dactylis glomerata	Orchard Grass	FACU
Dasiphora fruticosa	Golden-Hardhack	FAC
Deschampsia caespitosa	Tufted Hair Grass	FACW
Descurainia sophia	Herb Sophia	NL

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

New species identified in 2014 are bolded.

Table 2. (Continued). Vegetation species observed from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

Scientific Names	Common Names	WMVC Indicator Status[1]
Dracocephalum sp.	Dragonhead	NL
Eleocharis palustris	Common Spike-Rush	OBL
Elodea sp.	Waterweed	NL
Elymus cinereus	Great Basin Wildrye	NL
Elymus repens	Creeping Wild Rye	FAC
Elymus sp.	Wild Rye	NL
Elymus trachycaulus	**Slender Wild Rye**	**FAC**
Epilobium ciliatum	Fringed Willowherb	FACW
Equisetum arvense	Field Horsetail	FAC
Equisetum hyemale	Tall Scouring-Rush	FACW
Festuca arundinacea	Tall fescue	NL
Festuca pratensis	Meadow Fescue	NL
Fragaria virginiana	Virginia Strawberry	FACU
Galium palustre	Common Marsh Bedstraw	OBL
Geum macrophyllum	Large-Leaf Avens	FAC
Glyceria elata	Tall Manna Grass	FACW
Glyceria grandis	American Manna Grass	OBL
Glyceria striata	Fowl Manna Grass	OBL
Glycyrrhiza lepidota	American Licorice	FAC
Helianthus annuus	Common Sunflower	FACU
Hordeum jubatum	Fox-Tail Barley	FAC
Juncus balticus	Baltic Rush	FACW
Juncus bufonius	Toad Rush	FACW
Juncus effusus	Lamp Rush	FACW
Juncus ensifolius	Dagger-Leaf Rush	FACW
Juncus nevadensis	Sierran Rush	FACW
Juncus sp.	Rush	NL
Juncus tenuis	Lesser Poverty Rush	FAC
Juncus torreyi	Torrey's Rush	FACW
Lappula occidentalis	Flatspine Stickseed	NL
Larix occidentalis	Western Larch	FACU
Leymus cinereus	Great Basin Lyme Grass	FAC
Lotus corniculatus	Garden Bird's-Foot-Trefoil	FAC
Lycopus asper	Rough Water-Horehound	OBL
Medicago lupulina	Black Medick	FACU
Medicago sativa	Alfalfa	UPL
Medicago sp.	Medick/burclover	NL
Melilotus officinalis	Yellow Sweet-Clover	FACU
Mentha arvensis	American Wild Mint	FACW
Mimulus guttatus	Seep Monkey-Flower	OBL
Myriophyllum sp.	Water-Milfoil	NL
Pascopyrum smithii	Western-Wheat Grass	FACU

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

New species identified in 2014 are bolded.

Table 2. (Continued). Vegetation species observed from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

Scientific Names	Common Names	WMVC Indicator Status[1]
Persicaria lapathifolia	Dock-Leaf Smartweed	FACW
Persicaria maculosa	Spotted Lady's-Thumb	FACW
Phalaris arundinacea	Reed Canary Grass	FACW
Phleum pratense	Common Timothy	FAC
Plantago major	Great Plantain	FAC
Poa palustris	Fowl Blue Grass	FAC
Poa pratensis	Kentucky Blue Grass	FAC
Polypogon monspeliensis	Annual Rabbit's-Foot Grass	FACW
Populus angustifolia	Narrow-Leaf Cottonwood	FACW
Populus balsamifera	Balsam Poplar	FAC
Populus tremuloides	Quaking Aspen	FACU
Potentilla gracilis	Graceful Cinquefoil	FAC
Prunus virginiana	Choke Cherry	FACU
Ranunculus aquatilis	**White Water-Crowfoot**	**OBL**
Ranunculus sp.	Buttercup	NL
Rhamnus alnifolia	Alder-Leaf Buckthorn	FACW
Ribes lacustre	Bristly Black Gooseberry	FAC
Rosa woodsii	Woods' Rose	FACU
Rumex crispus	Curly Dock	FAC
Ruppia maritima	Beaked Ditch-Grass	OBL
Salix amygdaloides	**Peach-Leaf Willow**	**FACW**
Salix bebbiana	Gray Willow	FACW
Salix drummondiana	Drummond's Willow	FACW
Salix exigua	Narrow-Leaf Willow	FACW
Salix lasiandra	Pacific Willow	FACW
Salix lutea	Yellow Willow	OBL
Salix sp.	Willow	NL
Scirpus microcarpus	Red-Tinge Bulrush	OBL
Scirpus pallidus	Pale Bulrush	OBL
Scutellaria galericulata	Hooded Skullcap	OBL
Scutellaria lateriflora	Mad Dog Skullcap	FACW
Sinapis arvensis	Corn Mustard	NL
Sisymbrium altissimum	Tall Hedge-Mustard	FACU
Sisyrinchium idahoense	Idaho Blue-Eyed-Grass	FACW
Solidago canadensis	Canadian Goldenrod	FACU
Stellaria graminea	Grass-Leaf Starwort	FACU
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	UPL
Tragopogon dubius	Meadow Goat's-beard	NL
Trifolium arvense	Rabbit-foot Clover	NL
Trifolium hybridum	Alsike Clover	FAC
Trifolium pratense	Red Clover	FACU
Trifolium repens	White Clover	FAC
Trifolium sp.	Clover	NL

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

New species identified in 2014 are bolded.

Table 2. (Continued). Vegetation species observed from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

Scientific Names	Common Names	WMVC Indicator Status[1]
Triglochin maritima	Seaside Arrow-Grass	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Urtica dioica	Stinging Nettle	FAC
Verbascum thapsus	Great Mullein	FACU
Vicia americana	American Purple Vetch	FAC

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

New species identified in 2014 are bolded.

Wetland community Type 4 – *Salix drummondiana* was identified in a 0.14 acres area in the northwest corner of the site near the bank of the Shields River. The area encompassed a pre-existing scrub-shrub wetland associated with an old flood channel meander scar of the Shields River. Dominant species included Drummond willow (*Salix drummondiana*), western-wheatgrass (*Pascopyrum smithii*), and Nebraska sedge (*Carex nebrascensis*). Other wetland species identified in this community include American sloughgrass (*Beckmannia syzigachne),* bristly black gooseberry (*Ribes lacustre*), red-tinge bulrush, American mannagrass (*Glyceria grandis*), stinging nettle (*Urtica dioica*), orchard grass, and common Timothy.

Wetland community Type 5 – *Populus balsamifera* was a pre-existing undisturbed forested, scrub/shrub wetland located on 0.69 acres south of the construction area. The vegetation community was dominated by balsam poplar (*Populus balsamifera*), narrow-leaf cottonwood (*Populus angustifolia*), smooth brome, fowl mannagrass (*Glyceria striata)*, gray willow (*Salix bebbiana*), red tinge bulrush, Pacific willow (*Salix lasiandra*), and blue skullcap (*Scutellaria lateriflora*).

Wetland community Type 7 – Aquatic Macrophytes was found in excavated depressions with the longest duration of surface water and support semi-permanent open water. Two depressions were identified as Aquatic Macrophytes community across the site and were located within the southern half of the site where a higher seasonal groundwater table is sustained. The community characterized approximately 0.92 acres of the site. The wetland has been classified as an aquatic bed community since 2011, generally defined as a wetland vegetation class dominated by plants "that grow principally on or below the surface of the water for most of the growing season in almost all years (Cowardin *et al*. 1979)." The Montana Natural Heritage Program (MTNHP) website further defines the Palustrine Aquatic Bed Class as having aquatic plants at greater than 30 percent cover and water depths of greater than 0.5 m (and less than 2 meters) (MTNHP 2011). The dominant species were green algae (protist), sedges (*Carex* sp.) and American sloughgrass, with lower covers of water-milfoil (*Myriophyllum sp*.), American mannagrass, and beaked ditch-grass (*Ruppia maritima*).

Upland community Type 8 – *Bromus* spp./*Trifolium* spp. was identified on 11.82 acres of upland located within the excavated footprint. This community replaced Community Type 2 – *Chenopodium* spp./*Phleum pratense* in 2011 as primary colonizing species decreased dominance and more persistent, perennial plants increased in cover. The vegetation cover increased notably within this community between 2013 and 2014. This community decreased in size by 0.25 acres since 2013, primarily a result of the expansion of adjacent wetland habitat into the lower elevations of this community. The community was dominated by smooth brome, common Timothy, Kentucky bluegrass, and creeping wildrye (*Elymus* repens). Forty eight other species were observed at five percent or less in this community.

Upland community Type 10 – *Bromus inermis*/*Populus tremuloides* was identified on 0.22 acres of upland located along the northern boundary. This community was distinguished from Upland Type 1- *Phleum pratense/Poa pratensis* by an increase in smooth brome and regeneration of quaking aspen (*Populus tremuloides*) species observed in 2014. Other species observed were creeping wildrye, common dandelion, and Kentucky bluegrass.

Wetland community Type 11 – *Juncus* spp. characterized 10.43 acres of the constructed depressions and floodplain channel first characterized in 2014. This community replaced Community Type 6 – *Beckmannia syzigachne* as primary colonizing species decreased dominance and more persistent, perennial plants increased in cover. The base elevation of a majority of the depressions in this community contained surface water or signs of recent inundation in 2014. This diverse community type was dominated by fowl mannagrass, Baltic rush (*Juncus balticus*), Torrey's rush (*Juncus torreyi),* field meadow foxtail (*Alopecurus pratensis*), field horsetail (*Equisetum arvense)*, and lamp rush. Fifty four other species were identified at five percent or less cover in this community.

In general, the site has continued to develop desirable hydrophytic vegetation since initial monitoring in 2010. Community Type 11 – *Juncus* spp. (previously Type -6- *Beckmannia syzigachne)*, continued to develop and increased in size to 10.43 acres in 2014. The overall percent cover of hydrophytic vegetation in the constructed floodplain continued to increase in 2014, improving soil stability and protection from erosion when the channel is activated during high flows in the Shields River.

Vegetation cover was measured along three transects at the Easton Ranch Mitigation Site in 2014 (Figure 2, Appendix A). The data recorded on Transect 1 (Monitoring Forms, Appendix B) are summarized in tabular and graphical formats in Table 3 and Chart 1 and Chart 2, respectively. The transect ends were photographed (Page C-6 in Appendix C). Transect T-1 extends 1,376 feet (1,072 feet in 2010 due to field error during survey) from south to north across several constructed cells east of the constructed channel. The transect intervals alternated between upland community Types 1 – *Phleum pratense/Poa*

pratensis, 8 – *Bromus* spp./*Trifolium* spp. and 10 – *Bromus inermis/Populus tremuloides* and wetland communities Types 7 – Aquatic macrophytes and 11 – *Juncus* spp.. Wetland community 11 replaced wetland community 9 in 2014 due to the continued development of wetland vegetation within these excavated depressions. Hydrophytic vegetation communities comprised 23.5 percent of T-1 in 2014, an increase of 6.5 percent since 2013.

Table 3. Data summary for Transect 1 from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	2010	2011	2012	2013	2014
Transect Length (feet)	1072	1376	1376	1376	1376
Vegetation Community Transitions along Transect	11	11	12	12	14
Vegetation Communities along Transect	3	4	4	4	5
Hydrophytic Vegetation Communities along Transect	1	2	2	2	2
Total Vegetative Species	33	18	34	44	53
Total Hydrophytic Species	15	19	20	29	33
Total Upland Species	18	19	14	15	20
Estimated % Total Vegetative Cover	65	70	80	85	85
Estimate % Unvegetated	35	30	20	15	15
% Transect Length Comprising Hydrophytic Vegetation Communities	28.0	17.0	14.7	17.0	23.5
% Transect Length Comprising Upland Vegetation Communities	70.0	83.0	82.5	83.0	76.5
% Transect Length Comprising Unvegetated Open Water	2.5	0.0	2.8	0.0	0.0
% Transect Length Comprising Mudflat	0.0	0.0	0.0	0.0	0.0

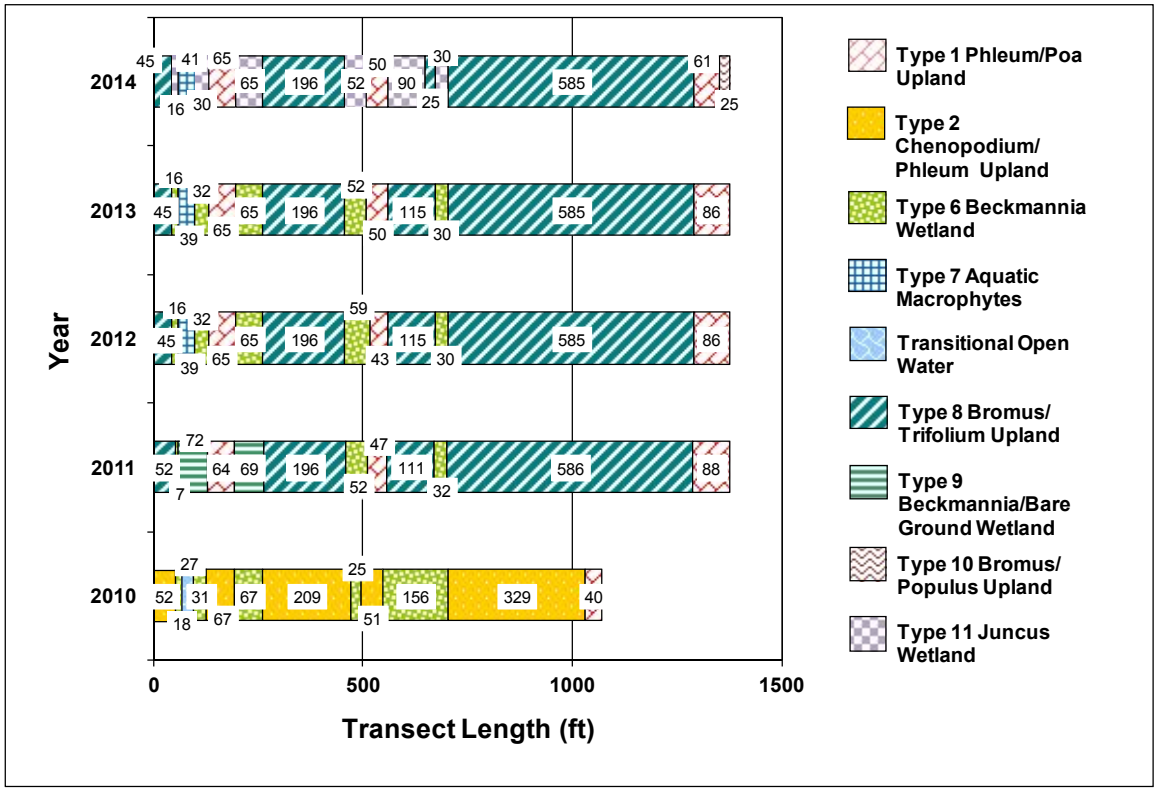

Chart 1. Transect maps showing community types on Transect T-1 from start (0 feet) to finish (1376 feet in from 2011 to 2014 and 1072 feet in 2010) at the Easton Ranch Wetland Mitigation Site.

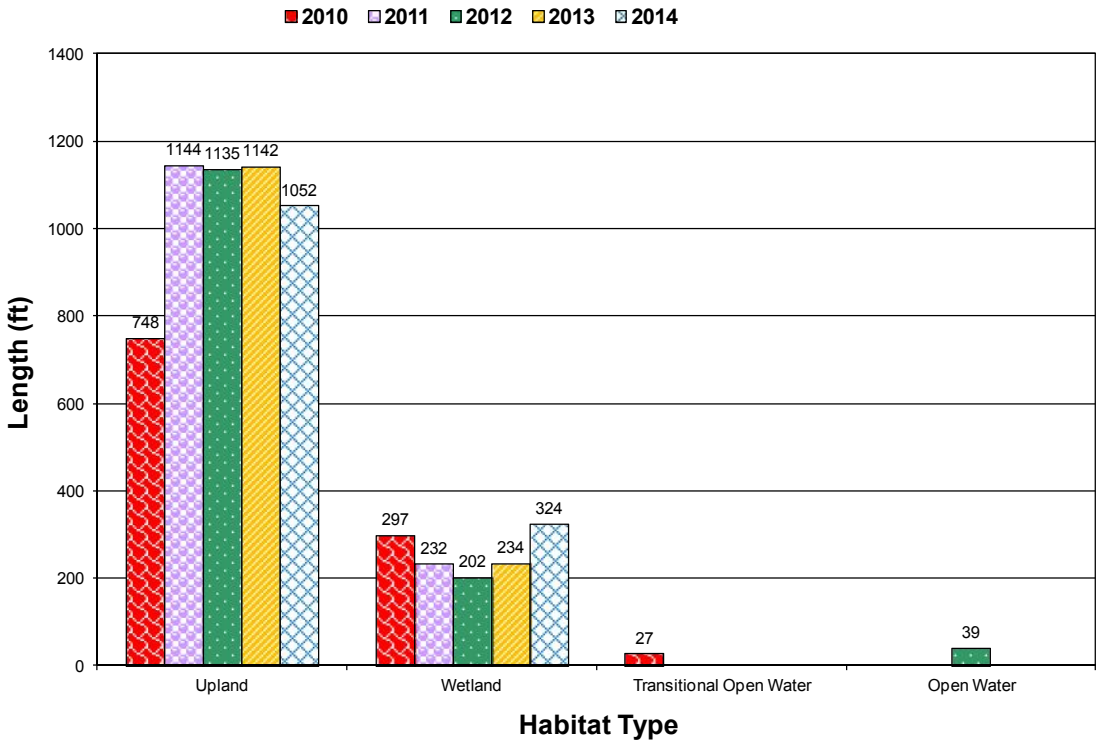

Chart 2. Length of habitat types within Transect T-1 from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

Data collected on Transect T-2 (Monitoring Form, Appendix B) are summarized in tabular and graphic formats (Table 4, Charts 3 and 4, respectively). The endpoints of Transect T-2 were photographed (Page C-7 in Appendix C). Wetland Types 3 and 11 and upland Types 1 and 8 were identified along this transect. Hydrophytic vegetation communities comprised 42 percent of T-2 in 2014, a slight increase from 41 percent in 2011. An increase of three hydrophytic species, for a total of 35 species, was documented along T-2 in 2014.

Table 4. Data summary for Transect T-2 from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	2010	2011	2012	2013	2014
Transect Length (feet)	**1333**	**1333**	**1333**	**1333**	**1333**
Vegetation Community Transitions along Transect	11	8	7	7	7
Vegetation Communities along Transect	4	4	4	4	4
Hydrophytic Vegetation Communities along Transect	2	2	2	2	2
Total Vegetative Species	35	38	42	45	52
Total Hydrophytic Species	17	22	29	32	35
Total Upland Species	18	16	13	13	17
Estimated % Total Vegetative Cover	65	75	80	85	85
Estimated % Unvegetated	35	25	20	15	15
% Transect Length Comprising Hydrophytic Vegetation Communities	38.7	41.0	39.5	38.9	41.9
% Transect Length Comprising Upland Vegetation Communities	61.3	59.0	60.5	61.1	58.1
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	0.0	0.0	0.0	0.0	0.0

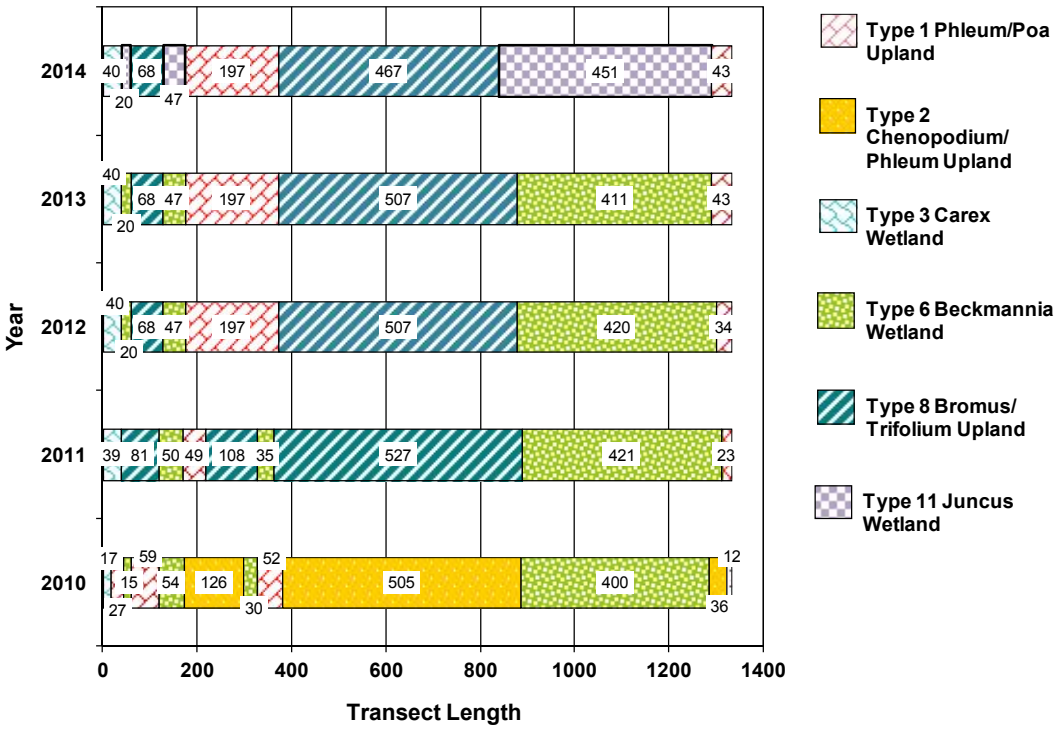

Chart 3. Transect maps showing community types on Transect T-2 from 2010 to 2014 from start (0 feet) to finish (1333 feet) at the Easton Ranch Wetland Mitigation Site.

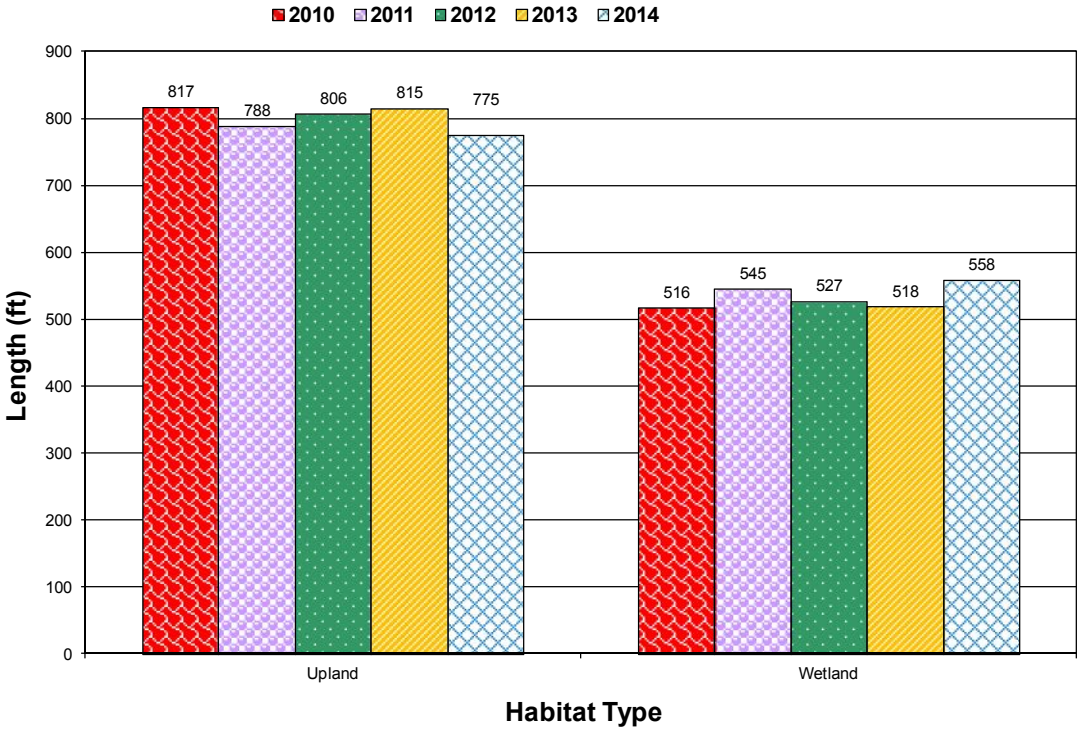

Chart 4. Length of habitat types within Transect T-2 from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

Transect T-3 was established west to east across the constructed cells and channel in the south half of the site (Figure 2, Appendix A). Transect T-3 data (Monitoring Form, Appendix B) are summarized in tabular and graphic formats (Table 5 and Charts 5 and 6, respectively). Photographs of the endpoints of Transect T-3 are located on Page C-8 in Appendix C. The transect intervals intercepted upland community Types 1 and 8 and wetland community Type 11. Hydrophytic vegetation comprised 48.9 percent of Transect T-3 in 2014, reflecting no change, with the exception of community type number, from 2013. There were minimal differences between the transect data collected in 2014 versus 2013. The ground elevation is slightly lower in the south half of the site relative to overall groundwater levels and may contribute to the comparatively steady vegetation communities documented along T-3.

Table 5. Data summary for Transect T-3 from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	2010	2011	2012	2013	2014
Transect Length (feet)	**751**	**751**	**751**	**751**	**751**
Vegetation Community Transitions along Transect	11	9	9	8	8
Vegetation Communities along Transect	3	3	3	3	3
Hydrophytic Vegetation Communities along Transect	1	1	1	1	1
Total Vegetative Species	24	35	33	34	39
Total Hydrophytic Species	11	17	20	20	24
Total Upland Species	13	18	13	14	15
Estimated % Total Vegetative Cover	65	70	80	85	85
Estimated % Unvegetated	35	30	20	15	15
% Transect Length Comprising Hydrophytic Vegetation Communities	45.0	50.0	49.1	48.9	48.9
% Transect Length Comprising Upland Vegetation Communities	55.0	50.0	50.9	51.1	51.1
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	0.0	0.0	0.0	0.0	0.0

Fourteen infestations of Canadian thistle (*Cirsium arvense*), a Priority 2B noxious weed, were identified on site, primarily in uplands and along the site perimeter (Figure 3, Appendix A). The infestations ranged in area from less than 0.1 acres to between 0.1 and 1.0 acre. The cover classes ranged from a trace (less than 1 percent) to moderate (6 to 25 percent) cover. Canadian thistle was observed in communities 1, 3, 5, 8, 10, and 11. Ten infestations of gypsy-flower (*Cynoglossum officinale*) were observed primarily along the west perimeter, with two infestations along the east perimeter and two infestations along the north perimeter. The size of the infestations was less than 0.1 acres with a trace (less than one percent) to five percent cover.

Several hundred cuttings and containerized vegetative materials were planted along the constructed flood channel to increase root stability. The plants that were thriving in 2013 exhibited good vigor during the 2014 site visit. Approximately 10 red-osier dogwood (*Cornus alba*), 30 sandbar willow, 26 thin-leaf alder, and 40 willow cuttings were identified as surviving in 2014. There was an increase in the amount of woody volunteer species, primarily quaking aspen (*Populus tremuloides*) along the northern and southern project boundaries in 2014.

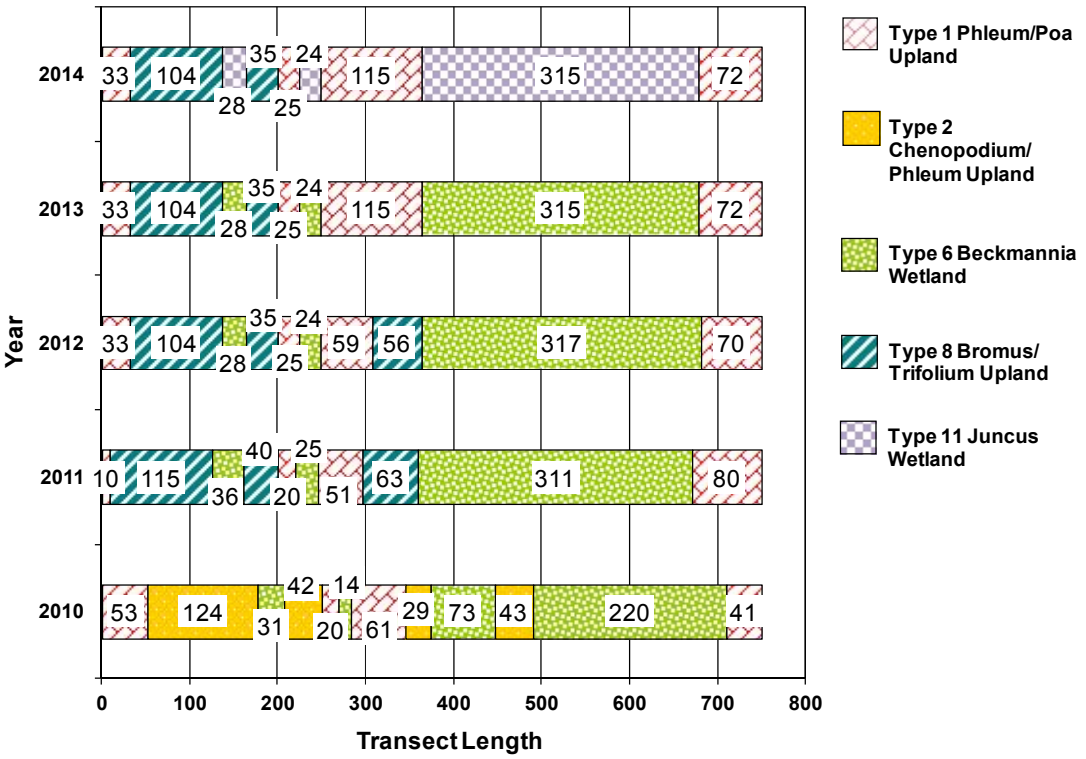

Chart 5. Transect maps showing community types on Transect T-3 from 2010 to 2014 from start (0 feet) to finish (751 feet) at the Easton Ranch Wetland Mitigation Site.

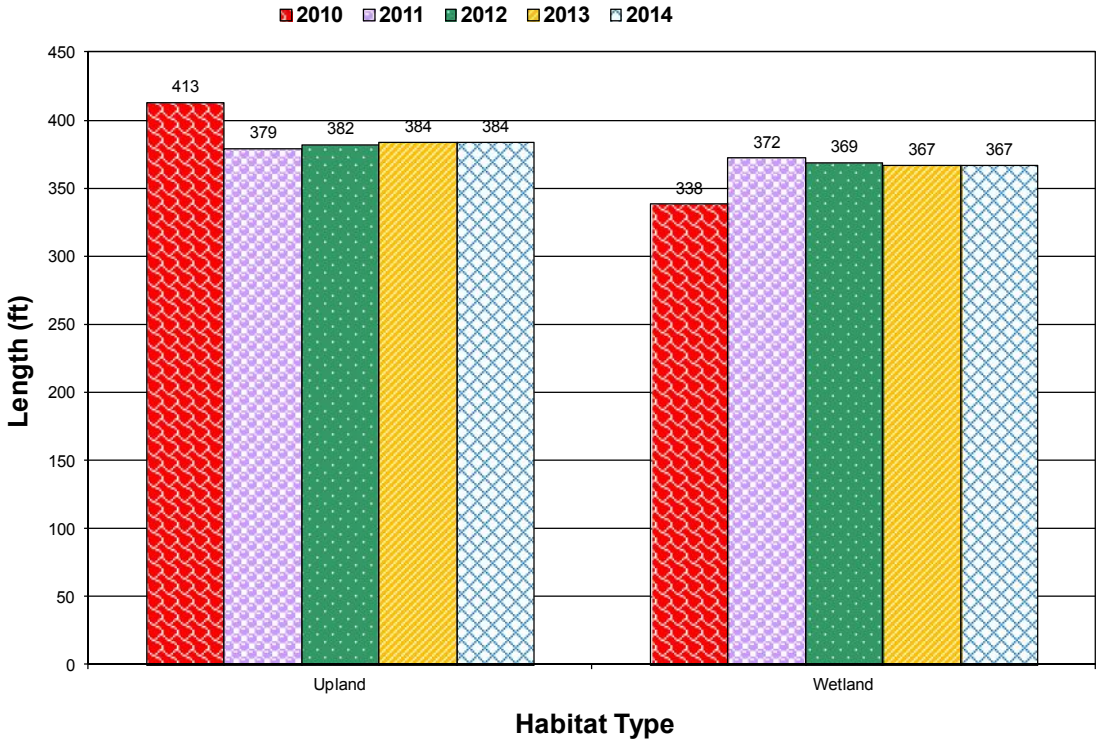

Chart 6. Length of habitat types within Transect T-3 from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

3.3. Soil

The project site was mapped in the *Park County Soil Survey* (USDA 2010) within the Meadowcreek and rarely-flooded Nesda complexes, found on 0 to 2 percent slopes (155A). The Meadowcreek series is a somewhat poorly drained clay loam soil located on floodplains within valleys. The map unit is listed on the Montana Hydric soil list and is classified as a frigid Fluvaquentic Haplustoll. The Nesda loam (600B) is mapped in a small area at the south end of the project. The loam is a well-drained, frigid Fluventic Haplustoll that is listed on the Montana hydric soil list.

Soil test pits were excavated at four locations, all within what was originally mapped as the Meadowcreek series (E-1 through E-4, Figure 2, Appendix A). Data point E-1 and E-3 were located within upland Community 8 and upland Community 1, respectively. Data points E-2 and E-4 were located in shallow constructed wetland depressions in Community 11 on the west and east project boundaries. The soil profile at E-1 revealed a dark brown (10YR 3/3) silt loam. Soil profile E-3 was a brownish black (10YR 3/2) sandy loam soil. The soils observed at data points E-1 and E-3 had no hydric soil indicators. The profile at E-2 revealed a brown (10 YR 4/1) silt loam with twenty percent brown (7.5YR 4/4) redox concentrations in the matrix. This soil met the criteria for depleted matrix (F3) and classification as a hydric soil Data point E-4 exhibited a grayish yellow brown sandy loam soil (10YR 4/2) and met the criteria for depleted matrix (F3) and classification as hydric soil. The soil profiles in the test pits did not generally correlate with the map unit, likely as a result of mixing that occurred during construction.

3.4. Wetland Delineation

Four data points were used to support the wetland boundary (E-1 to E-4, Figure 2, Appendix A and Wetland Determination Data Forms, Appendix B). Data points E-1 and E-2 were located in the southwestern corner of the site with data points E-3 and E-4 located along the east side of the excavated channel near the middle of the site. Data points E-1 was located in community Type 8, E-3 was located in community Type 1, with data points E-2 and E-4 in community Type 11. The total wetland acreage, including pre-existing wetland, was 12.64 acres in 2014, an increase of 0.24 acres since 2013 (Table 6). The delineation mapped 1.10 acres of pre-existing emergent and shrub/scrub wetland within the mitigation boundaries in 2014(Figure 3, Appendix A). The pre-existing wetlands were originally defined during the baseline investigation completed in August 2001 (MDT 2008). The 2014 delineated wetland acres include 1.56 acres of the re-established flood channel (Community 11, Figure 3, Appendix A) and 9.98 acres of created wetland. Uplands account for 20.87 acres of the mitigation site. Water from the irrigation system at the northeast boundary had yet to be diverted to the site during the July 2014 site visit. The frequency and duration of surface and ground water does not appear to be sufficient to support a dominance of hydrophytic plants in a majority of the excavated area. The density of the vegetation cover in the depressions characterized by Community 11 (wetland) continued to increase in 2014.

Table 6. Total wetland acres delineated from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

Habitat	2001 (acres)	2010 (acres)	2011 (acres)	2012 (acres)	2013 (acres)	2014 (acres)
Pre-existing Wetland Area	1.10	1.10	1.10	1.10	1.10	1.10
Created Wetland Area	---	10.43	10.54	10.54	11.30	11.54
Total Wetland Habitat	**1.10**	**11.53**	**11.64**	**11.64**	**12.40**	**12.64**

3.5. Wildlife

A comprehensive list of bird and other wildlife species observed directly or indirectly from 2010 to 2014 is presented in Table 7. Seven bird species were identified in 2014. The behaviors and habitats of all birds observed in 2014 are listed on the Mitigation Monitoring Form (Appendix B). Deer (*Odocoilous*) tracks were observed on site in 2014.

Table 7. Wildlife species observed from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIAN	
Columbia Spotted Frog	*Rana luteiventris*
Woodhouse's Toad	*Bufo woodhousii*
MAMMAL	
Coyote	*Canis latrans*
Deer Mouse	*Peromyscus maniculatus*
Deer Sp.	***Odocoileus sp.***
Long-tailed Vole	*Microtus longicaudus*
Meadow Vole	*Microtus pennsylvanicus*
Moose	*Alces americanus*
Porcupine	*Erethizon dorsatum*
Pronghorn	*Antilocapra americana*
Raccoon	*Procyon lotor*
Richardson's Ground Squirrel	*Spermophilus richardsonii*
Striped Skunk	*Mephitis mephitis*
White-footed Mouse	*Peromyscus leucopus*
White-tailed Deer	*Odocoileus virginianus*
REPTILE	
Plains Gartersnake	*Thamnophis radix*

Species identified in 2014 are listed in **bold** type.

Table 7 (continued). Wildlife species observed from 2010 to 2014 at the Easton Ranch Wetland Mitigation Site.

COMMON NAME	SCIENTIFIC NAME
BIRD	
American Coot	*Fulica americana*
American Crow	*Corvus brachyrhynchos*
American Goldfinch	*Spinus tristus*
American Kestrel	*Falco sparverius*
American Robin	***Turdus migratorius***
American Wigeon	*Anas americana*
Bald Eagle	*Haliaeetus leucocephalus*
Band-tailed Pigeon	*Patagioenas fasciata*
Bank Swallow	*Riparia riparia*
Belted Kingfisher	*Megaceryle alcyon*
Black-billed Magpie	*Pica hudsonia*
Black-capped Chickadee	*Poecile atricapillus*
Canada Goose	*Branta canadensis*
Cedar Waxwing	*Bombycilla cedrorum*
Eastern Kingbird	*Tyrannus tyrannus*
Golden Eagle	*Aquila chrysaetos*
Gray Catbird	***Dumetella carolinensis***
Great Horned Owl	*Bubo virginianus*
House Wren	*Troglodytes aedon*
Killdeer	*Charadrius vociferus*
Lesser Yellowlegs	*Tringa flavipes*
Mallard	*Anas platyrhynchos*
Mountain Bluebird	*Sialia currucoides*
Mourning Dove	*Zenaida macroura*
Northern Flicker	*Colaptes auratus*
Northern Harrier	*Circus cyaneus*
Osprey	*Pandion haliaetus*
Red-tailed Hawk	***Buteo jamaicensis***
Red-winged Blackbird	*Agelaius phoeniceus*
Sandhill Crane	***Grus canadensis***
Song Sparrow	***Melospiza melodia***
Spotted Sandpiper	*Actitis macularius*
Tree Swallow	***Tachycineta bicolor***
Turkey Vulture	*Cathartes aura*
Vesper Sparrow	*Pooecetes gramineus*
Western Bluebird	*Sialia mexicana*
Western Meadowlark	*Sturnella neglecta*
Willet	*Tringa semipalmata*
Wilson's Snipe	*Gallinago delicata*
Yellow Warbler	***Dendroica petechia***
Yellow-rumped Warbler	*Dendroica coronata*

Species identified in 2014 are listed in **bold** type.

3.6. Functional Assessment

The 2008 MDT Montana Wetland Assessment Method (MWAM) (Berglund and McEldowney 2008) has been used to evaluate three assessment areas (AA) (Table 8 and Appendix B). The AAs were separated by Creation, Restoration, and Preservation areas of the mitigation site and are discussed below.

The Creation AA encompassed 9.98 acres of constructed palustrine, emergent wetland cells and has generated 56.39 functional units. The overall rating for the Creation AA remained at a Category III wetland characterized by low disturbance in 2014. The ratings were high for short and long term surface water storage, sediment/nutrient/toxicant removal, and production export/food chain support. The number of units and acreage are expected to increase as some areas of upland in the excavated areas (Community 8) transition to wetland habitat, provided sufficient wetland hydrology exists within the site.

The Restoration AA consisted of 1.56 acres of re-established flood channel. The Restoration AA (flood channel) received a Category III rating with 58.5 percent of the total possible points. There was an increase from moderate to high rating for sediment/shoreline stabilization between 2012 and 2013. Ratings were high for sediment/nutrient/toxicant removal and moderate for general wildlife habitat, flood attenuation, short and long term surface water storage, production export/food chain support, groundwater discharge/recharge, and uniqueness. The Restoration AA achieved a total of 9.13 functional units in 2014.

Table 8. Functions and Values of the Easton Ranch Wetland Mitigation Site from 2010 to 2014.

Function and Value Parameters from the 2008 MDT Montana Wetland Assessment Method	2010 Creation	2011 Creation	2012 Creation	2013 Creation	2014 Creation
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.0)
MTNHP Species Habitat	Mod (0.6)	Mod (0.6)	Low (0.2)	Low (0.2)	Low (0.2)
General Wildlife Habitat	Mod (0.5)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.6)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)
Short and Long Term Surface Water Storage	High (0.9)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	Mod (0.7)	High (0.9)	High (0.9)	High (0.9)
Sediment/Shoreline Stabilization	Low (0.2)	Low (0.2)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Production Export/ Food Chain Support	Mod (0.5)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Uniqueness	Low (0.2)	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)
Actual Points / Possible Points	**5.25 / 10**	**5.75 / 10**	**5.75 / 10**	**5.75 / 10**	**5.65 / 10**
% of Possible Score Achieved	**52.5%**	**57.5%**	**57.5%**	**57.5%**	**56.5%**
Overall Category	**III**	**III**	**III**	**III**	**III**
Acreage of Assessed Aquatic Habitats within Easement	**8.98**	**9.09**	**9.09**	**9.74**	**9.98**
Functional Units (acreage x actual points)	**47.15**	**52.27**	**52.27**	**56.01**	**56.39**

Table 8 (Continued). Functions and Values of the Easton Ranch Wetland Mitigation Site from 2010 to 2014.

Function and Value Parameters from the 2008 MDT Montana Wetland Assessment Method	2010 Restoration	2011 Restoration	2012 Restoration	2013 Restoration	2014 Restoration
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.0)
MTNHP Species Habitat	Mod (0.6)	Mod (0.6)	Low (0.2)	Low (0.2)	Low (0.2)
General Wildlife Habitat	Low (0.3)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.5)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Short and Long Term Surface Water Storage	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Sediment/Nutrient/Toxicant Removal	Mod (0.6)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Mod (0.6)	Mod (0.6)	Mod (0.6)	High (0.9)	High (0.9)
Production Export/ Food Chain Support	Mod (0.5)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Groundwater Discharge/Recharge	High (1.0)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Uniqueness	Low (0.2)	Low (0.3)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)
Actual Points / Possible Points	**4.95 / 10**	**5.95 / 10**	**5.65 / 10**	**5.95 / 10**	**5.85 / 10**
% of Possible Score Achieved	**49.5%**	**59.5%**	**56.5%**	**59.5%**	**58.5%**
Overall Category	**III**	**III**	**III**	**III**	**III**
Acreage of Assessed Aquatic Habitats within Easement	**1.45**	**1.45**	**1.45**	**1.56**	**1.56**
Functional Units (acreage x actual points)	**7.18**	**8.63**	**8.19**	**9.28**	**9.13**

Function and Value Parameters from the 2008 MDT Montana Wetland Assessment Method	2010 Preservation	2011 Preservation	2012 Preservation	2013 Preservation	2014 Preservation
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.0)
MTNHP Species Habitat	Mod (0.6)	Mod (0.6)	Low (0.2)	Low (0.2)	Low (0.2)
General Wildlife Habitat	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA
Flood Attenuation	Exc (1.0)	High (0.9)	Mod (0.6)	High (0.9)	High (0.9)
Short and Long Term Surface Water Storage	High (0.8)	High (0.8)	High (0.8)	High (0.8)	Mod (0.6)
Sediment/Nutrient/Toxicant Removal	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	NA	NA	NA	NA	NA
Production Export/ Food Chain Support	Mod (0.7)	Exc (1.0)	Exc (1.0)	Exc (1.0)	High (0.9)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	Mod (0.7)
Uniqueness	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Recreation/Education Potential (bonus points)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)
Actual Points / Possible Points	**6.65 / 9**	**6.95 / 9**	**6.25 / 9**	**6.55 / 9**	**5.85 / 9**
% of Possible Score Achieved	**73.9%**	**77.2%**	**69.4%**	**72.8%**	**65.0%**
Overall Category	**II**	**II**	**II**	**II**	**III**
Acreage of Assessed Aquatic Habitats within Easement	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**
Functional Units (acreage x actual points)	**7.32**	**7.65**	**6.88**	**7.21**	**6.44**

The 1.1 acre Preservation AA encompassed the existing forested, shrub/scrub and palustrine emergent wetlands. The existing wetland within the Preservation AA was rated as Category III with 65.0 percent of the possible points. The presence of emergent, scrub/shrub, and forested wetland types increased the structural diversity and flood attenuation ratings. Ratings were high for general wildlife habitat, flood attenuation and sediment/nutrient/toxicant removal. This AA was re-evaluated in 2014 as supporting a seasonal/intermittent water regime, a decrease from a perennial water regime recognized on previous evaluations and resulted in a decrease of actual points and functional units. The Preservation AA scored a total of 6.44 functional units in 2014.

3.7. Photo Documentation

Photographs taken at photo points one through seven (PP1 through PP7; Figure 2, Appendix A) from 2010, 2013, and 2014 are shown on pages C-1 to C-5 of Appendix C. Transect end points are shown on pages C-6 to C-8 of Appendix C. Panoramas of photo points PP-2 to PP-5 are included on pages C-9 to C-11 of Appendix C. Photos of the data points are included on page C-12. Photo points 4A and 4B on pages C-3 and C-4 show the Shields River just outside the northwest corner of the project area from 2010, 2013 and 2014.

3.8. Maintenance Needs

The irrigation diversion structure has been closed during all five site investigations. It is recommended that water be diverted into the site during the early growing season to promote increased development of hydric soils and hydrophytic vegetation within the site. Nine bird-boxes were installed at the site between 2010 and 2014. Four of the bird boxes were occupied. All fences were intact. No maintenance was required for the man-made structures.

Fourteen infestations of Canadian thistle, a Priority 2B noxious weed, were identified primarily around the site perimeter (Figure 3). The infestations ranged in area from less than 0.1 acres to between 0.1 and 1.0 acre. The cover classes ranged from a trace (<1.0 percent) to moderate (6 to 25 percent) cover. Canadian thistle was observed in communities 1, 3, 5, 8, 10, and 11. Ten infestations of gypsy-flower were observed primarily in the north half of the site. The size of the infestations was less than 0.1 acres with a trace (<1.0 percent) to low (1 to 5 percent) cover. MDT has an on-going weed control program that assesses and employs weed-control measures within their wetland mitigation sites on a yearly basis.

The east bank of the Shields River along the northwest corner of the Easton Ranch mitigation site remained relatively stable through the 2011 runoff event. The structural integrity of the coir-wrapped soil lifts was intact following high flows. Fine-grain deposits accumulated on the lifts as flood waters receded. The 2011 flood flows resulted in the formation of a wider base-flow channel and a slight westward shift of the west bank, away from the site. A debris jam was removed from the channel and several downed trees were removed from the riparian cottonwood forest during the early part of 2012 and increased

vulnerability of the river to later migration. Photo points 4A and 4B on pages C-3 and C-4 show the banks of the Shields River in the northwest corner of the site from 2010, 2013 and 2014. These photos illustrate increased bank erosion in 2013 following the removal of the coarse woody debris and a re-accumulation of woody debris at this bend of the river in 2014.

3.9. Current Credit Summary

Table 9 summarizes the current estimated wetland credits based on the USACE approved credit ratios (MDT 2008) and the wetland delineation completed in July 2014. Proposed mitigation included the creation of 24.95 acres of emergent and shrub/scrub wetlands, the re-establishment of a 1.56 acre flood channel, the preservation of 1.10 acres of pre-existing wetland, and the maintenance of 6.43 acres of upland buffer. Proposed wetland credits for the project site totaled 27.41 credit acres, which accounted for 0.67 acres of impacts associated with the construction of the mitigation wetland.

The 2014 delineation identified a total of 12.64 acres of wetlands within the project boundary. Approximately 9.98 acres of emergent wetland has developed to date within the constructed cells. The restored channel encompassed 1.56 acres of riverine emergent wetland. The pre-existing wetlands, which included portions of communities 3, 4 and 7, encompassed 1.1 acres. Uplands accounted for 20.87 acres of the 33.51 acre site. The current 50-foot upland buffer calculated for this site totals 2.60 acres. The expected value of 6.43 acres of upland buffer was replaced in 2014 with the GIS-calculated 50-foot upland buffer of 2.60 acres based on the existing extent of wetland development within the site. This resulted in a slight decrease of credits between 2013 and 2014 although the overall extent of wetland habitat has increased. Applying the approved USACE Mitigation ratios to each mitigation feature, a total of 11.67 acres of credit were estimated in 2014 (Table 9), approximately 15.75 acres shy of the proposed final credit acreage.

This mitigation site has not developed wetland habitat as expected. Several of the excavated depressions that contained surface water in 2011 and 2014 were dry in 2012 and 2013, limiting the potential expansion of wetland acreage within the site (see photo sheets). The continued increase of wetland acreage delineated in 2014 was primarily associated with the lower topographical swales and basins and seasonal groundwater. Decreased water levels within the open-water depressions observed on site during the 2012 and 2013 field surveys were likely due to a decrease in precipitation during those years; in 2012 and 2013, precipitation was 18% and 51%, respectively, below the long term average. In 2014 precipitation was 22% above the long term average.

Table 9. Summary of wetland credits at the Easton Ranch Wetland Mitigation Site from 2010 to 2014.

Proposed Mitigation Features	Compensatory Mitigation Type	USACE Mitigation Ratios	Anticipated Final Credit Acreages	Proposed Final Wetland Credits (Acres)	2010 Wetland Acreages	2010 Estimated Credit (Acres)	2011 Wetland Acreages	2011 Estimated Credit (Acres)
Creation of palustrine emergent wetland via shallow excavation.	Creation	1:1	24.95	24.95	7.78	7.78	9.09	9.09
Re-establishment of relic flood channel.	Restoration (Re-establishment)	1:1	1.56	1.56	1.45	1.45	1.45	1.45
Preservation of existing shrub/scrub and palustrine emergent wetland.	Preservation	4:1	1.10	0.28	1.10	0.28	1.10	0.28
Establish a 50-foot wide upland buffer.	Upland Buffer	5:1	6.43	1.29	6.43*	1.29	6.43*	1.29
Project Impacts			-0.67	-0.67	-0.67	-0.67	-0.67	-0.67
Total				**27.41**		**10.12**		**11.44**

Proposed Mitigation Features	Compensatory Mitigation Type	2012 Wetland Acreages	2012 Estimated Credit (Acres)	2013 Wetland Acreages	2013 Credit Estimated (Acres)	2014 Wetland Acreages	2014 Credit Estimated (Acres)
Creation of palustrine emergent wetland via shallow excavation.	Creation	9.09	9.09	9.74	9.74	9.98	9.98
Re-establishment of relic flood channel.	Restoration (Re-establishment)	1.45	1.45	1.56	1.56	1.56	1.56
Preservation of existing shrub/scrub and palustrine emergent wetland.	Preservation	1.10	0.28	1.10	0.28	1.10	0.28
Establish a 50-foot wide upland buffer.	Upland Buffer	6.43*	1.29	6.43*	1.29	2.60**	0.52
Project Impacts		-0.67	-0.67	-0.67	-0.67	-0.67	-0.67
Total			**11.44**		**12.19**		**11.67**

*The upland buffer was expected to decrease as wetland areas expand within the mitigation boundary. Value presented in this table prior to 2014 (6.43ac) represented the expected extent of upland buffer once maximum wetland acreage has been achieved.

**50-foot buffer calculated with GIS in 2014.

Table 10 summarizes the mitigation goals for the Easton Ranch. The Easton Ranch wetland mitigation site has shown continued progress towards achieving goals, although meeting the targeted credit acreage by 2015 will not occur without increasing hydrology throughout the footprint of the excavated areas. The site has achieved five of the six goals for this site. Although the site has developed nearly 10 acres of wetland habitat, this value falls over 50 percent short of the 25 acres originally identified as a target for wetland creation.

Five of the mitigation goals have been achieved at this site. The constructed floodplain channel was activated during the 2011 spring runoff and resulted in development of scour holes, riffles, and point bars through natural fluvial geomorphic processes. Hydrophytic vegetation has established within the footprint of this channel. No bank erosion has been identified along the constructed channel through the course of yearly monitoring. Existing wetlands within the site have been preserved and grazing eliminated from these areas. The excavated depressions throughout the floodplain function as relic meander scars, storing surface water during periods of high flow within the Shields River. These depressional wetlands have improved the water storage capacity of the floodplain. The establishment of hydrophytic vegetation communities, preservation of existing scrub-shrub, forested, and emergent wetlands, and wildlife-friendly fencing around the site have improved wildlife habitat within the Easton Ranch wetland mitigation site.

The summary of performance standards listed in Table 11 indicates this site has not achieved the full suite of success criteria established in the mitigation plan for the Easton Ranch wetland mitigation site. All wetlands delineated within this site in 2014 met the USACE three parameter criteria for hydrology, vegetation, and soils. Groundwater has been documented filling the depressional wetlands excavated across the site. Groundwater wells established within the site during baseline evaluation had been removed during construction. Redoximorphic concentrations and other hydric characteristics have developed within the wetland soils across the site. Soils disturbed during construction have developed vegetation communities and are stable with no signs of active erosion. Areas identified as wetland habitat support a prevalence of hydrophytic vegetation. Trees and shrubs planted throughout the mitigation site continue to develop and natural recruitment of aspen, willows, and cottonwoods has been documented. Approximately 106 live planted woody stems were observed in 2014. The woody plants remain small and have yet to achieve areal coverage greater than one percent site wide.

Table 10. Summary of mitigation goals for Easton Ranch wetland mitigation site.

Mitigation Goal for Easton Ranch	Goal Achieved Y/N	Discussion
Create approximately 25 acres of new emergent, scrub/shrub and riparian wetlands by replacing existing hay fields with a variety of wetland communities that mimic habitats found in bio-reference wetland areas located north and south of the project.	N	A total of 9.98 acres of wetland habitat has been created at this site to date.
Re-establish a previously existing, relic floodplain channel and associated riparian and floodplain wetland areas totaling 1.56 acres.	Y	A 1.56-acre floodplain channel was excavated through the site. This channel was activated during peak spring runoff in 2011 with fluvial geomorphic processes resulting in scour holes, riffles, and point bars. No areas of bank erosion along this channel have developed and appears to be functioning as designed. Wetland vegetation has established within the footprint of the channel.
Preserve 1.1 acres of existing scrub/shrub, forested, and palustrine emergent communities at several locations within the project area.	Y	The 1.1 acres of existing scrub/shrub, forested, and palustrine emergent wetland communities have been preserved, livestock grazing has been eliminated, and the areas continue to exhibit wetland hydrology.
Mimic old meander scars and relic flood channels within the wetland mitigation site.	Y	Several depressional wetland areas have been constructed across the mitigation site and function as relic meander scars.
Improve water storage capacity and increase the amount of floodplain area across the site.	Y	Several depressional wetland areas have been constructed across the mitigation site and have increased the water storage capacity of the floodplain.
Increase the amount of wildlife habitat in this reach of the Shields River.	Y	Wildlife habitat has been improved and protected by excluding livestock grazing and promoting the establishment of wetland vegetation.

Table 11. Summary of performance standards and success criteria for Easton Ranch wetland mitigation site.

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Characteristics	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.
	Groundwater wells will be left undisturbed within the site for the purpose of monitoring groundwater elevations during the growing season.	N	No groundwater wells remain on site. Due to construction activities, the original monitoring wells were removed from the site.
	Groundwater is filling the depressional wetlands excavated into the upland areas of the site.	Y	Indicators of groundwater filling the depressional wetlands include sparsely vegetated concave surfaces, saturation to the surface and inundation.
	Constructed stream channel is stable.	Y	The constructed floodplain channel is stable with no bank erosion identified throughout the mitigation area.
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 has continued to develop across disturbed soils.
Hydrophytic Vegetation	Achieved when wetlands delineated as hydrophytic utilizing technical guidelines.	Y	Areas identified as wetland habitat within the mitigation site support a prevalence of hydrophytic vegetation (OBL, FACW, and FAC).
Woody Plants	Trees and shrubs will be installed and survival will be assessed; no specific survival criteria established.	Y	Trees and shrubs have been planted throughout the mitigation site and are assessed during each yearly monitoring visit. Approximately 6.7 percent of the wetland areas identified within the site are dominated by woody vegetation. Planted woody species continue to survive and develop along the constructed flood channel. Natural recruitment of aspen, willows, and cottonwoods within the site continue to establish.
Herbaceous Plants	At least 80 percent of ocular vegetation coverage by desirable hydrophytic vegetation.	Y	Desirable hydrophytic vegetation consist of greater than 80 percent of total vegetation cover within delineated wetlands.
Wetland Acreage Development	Provide 27.41 net credit acres for the project area.	N	A total of 12.44 acres of wetland credit has been generated for the mitigation site. This total includes 9.98 acres of created wetland, 1.56 acres of restored wetland, 1.10 acres of preserved wetland, establishment of a 6.43-acre upland buffer, and 0.67-acre debit from project impacts.

Table 11 (Continued). Summary of performance standards and success criteria for Easton Ranch wetland mitigation site.

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Acreage Development	Emergent wetland habitat will be 70-75% of mitigation wetland.	N	Emergent wetland habitat comprises approximately 86% of total wetland areas delineated in 2014.
	Scrub/shrub wetland habitat will be 15-20% of wetland area.	N	Scrub/shrub wetland habitat comprises approximately 6.6% of total wetland areas delineated in 2014.
	Open water will be <5% of wetland area.	Y	Aquatic macrophytes habitat comprises approximately 7.3% of total wetland areas delineated in 2014. These inundated areas (<3-ft deep) seasonally fluctuate throughout the growing season and support a diversity of submergent and emergent vegetation. The intent of this criterion was to minimize the amount of deep open water habitat greater than 3 feet in depth.
Floodplain Channel Restoration	Considered stable when banks are vegetated with a majority of deep-rooting riparian and wetland plant species	Y	Streambanks along the constructed channel are vegetated with a diversity of deep-rooting and wetland plant species.
	Bank stability will be evaluated by reference reach comparison.	Y	Banks within the constructed floodplain channel are stable and compare to reference reach conditions with no signs of erosion or channel movement.
	Vegetation transect across the floodplain will be monitored.	Y	Vegetation transect across the floodplain has been monitored yearly and supports a prevalence of species with a root stability index greater than 6.
Bank Stabilization (Shields River)	Area visually inspected and photo documented.	Y	The results of annual inspection and photo documentation along the Shields River in the northwestern corner of the site are presented in the mitigation monitoring reports.
	Stability achieved when the banks are vegetated with a majority of deep-rooting riparian and wetland plant species.	N	The banks of the Shields River are generally dominated by upland pasture grasses. Soil lifts and the rock toe installed along the bank are intact. Installed willow cuttings did not establish along this bank.
Upland Buffer	Noxious weeds do not exceed 10 percent cover within upland buffer area.	Y	Noxious weed cover is less than 10 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 have established greater than 50 percent cover by non-weed species.
Weed Control	Less than 5 percent absolute cover of state-listed noxious weed species across the site.	Y	State-listed noxious weed species across the site is less than 5 percent absolute cover.
Fencing	Install wildlife-friendly fencing along the easement boundaries.	Y	Wildlife-friendly fencing has been installed around the easement boundaries and is in good condition.
Monitoring	Monitor the site for a minimum period of five years or longer as determined by the US Army Corps.	N	Comprehensive site monitoring has been on-going for approximately 5 years, since the completion of construction activities in 2009.

The anticipated 27.41 acres of credit development has not occurred to date; anticipated credits and 2014 calculated credits have been discussed above. To satisfy this performance standard, an additional 14.97 acres of wetland habitat would need to be created within the site. It is recommended that additional hydrology be provided to the site. Additional hydrology sources potentially available to this site include increased irrigation water diversion and a side channel of the Shields River located directly north of the site. In general, the percentages of emergent and scrub/shrub wetland habitat types fall outside the identified success criteria (Table 11). The criterion for open water to occupy less than five percent of wetland area has been achieved.

The floodplain channel is considered stable and successfully restored. The channel cross-section was stable and included dominant plants species (rushes, sedges, and American slough grass) with high root stability indices. The bank stability of the Shields River in the northwestern corner of the site has been considered marginal as the vegetation established along the banks primarily consist of upland pasture grasses lacking deep-binding roots. The willow cuttings installed along this reach did not establish. Results of the annual inspections and photo documentation have been reported in the annual monitoring reports. The disturbed upland buffer has developed greater than 50 percent cover by non-weed species and noxious weed cover is less than 10 percent. The percent cover of bare ground has decreased notably across the site from 2010 to 2014. Absolute cover of state-listed noxious weed species across the site is less than five percent. Weed management by MDT is ongoing. The fencing around the site was intact and in good condition and grazing has been excluded from the mitigation area. This 2014 wetland mitigation monitoring report represents the fifth year of post-construction monitoring at this site.

4. REFERENCES

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Appendix A

Project Area Maps – Figures 2 and 3

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

Figure 2: 2014 Monitoring Activity Locations

N

0 125 250 500

Feet

PP2
PP1
T-1 Finish
VegTran1
E-4
E-3
T-1 Start
T-3 Finish
PP7
T-2 Start
PP3
PP4A
VegTran2
PP5
PP4B
Shields River
T-2 Finish
VegTran3
E-2
E-1
PP6
T-3 Start

Legend

- Vegetation Transect
- Monitoring Limits
- Data Points
- Photo Points
- Bird Box

Base Photography Date: July 24, 2014

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: Park Co., MT

PROJECT NO: NH-STPP 5(39)

FILE: Easton/Monitor2014.mxd

Project Name
Easton Ranch Wetland Mitigation

Drawing Title
2014 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
Brie	BV	LU

SCALE: Noted

Drawn: October 10, 2014

PROJ MGR: B Sandefur

CONFLUENCE
consulting incorporated

Figure 2

REV -

Figure 3: 2014 Mapped Site Features

N

0 125 250 500

Feet

Noxious Weeds
Cynoglossum officinale
Cirsium arvense
Infestation Size
X = <0.1 acre
▲ = 0.1 to 1 acre
■ = 1 to 5 acre
Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover)
M = Moderate (6-25% cover)

Vegetation Community Types

1 Phleum pratense/Poa pratensis
3 Carex spp.
4 Salix drummondiana
5 Populus balsamifera
7 Aquatic Macrophytes
8 Bromus spp./Trifolium spp.
10 Bromus inermis/Populus tremuloides
11 Juncus spp.

Legend

Monitoring Limits
Wetland Limits
Vegetation Communities
Base Photography Date: July 24, 2014

Acreages

Project Area	33.51 acres
Gross Wetland	12.64 acres
Pre-existing Wetland	1.10 acres
Net Wetlands	11.54 acres
Uplands	20.87 acres

LOCATION: Park Co., MT
PROJECT NO: STPX-0034(14)
FILE: Easton/Veg2014.mxd

Project Name: EASTON RANCH WETLAND MITIGATION
Drawing Title: 2014 MAPPED SITE FEATURES

DRAWN	CHECKED	APPROVED
Brie	BV	LU

SCALE: Noted
Drawn: October 10, 2014
PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

REV -

Appendix B

2014 MDT Wetland Mitigation Site Monitoring Form
2014 USACE Wetland Determination Data Form
2014 MDT Montana Wetland Assessment Form

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Easton Ranch Assessment Date/Time 7/1/2014 9:19:09 AM

Person(s) conducting the assessment: B Schultz, B Sandefur

Weather: Sunny, warm, recent precipitation Location: Easton Ranch Mitigation Site

MDT District: Butte Milepost: NA

Legal Description: T 4N R 9E Section(s) NW 1/4 Sec 32

Initial Evaluation Date: 8/25/2010 Monitoring Year: 5 #Visits in Year: 1

Size of Evaluation Area: 34 (acres)

Land use surrounding wetland:

Agriculture (hay) to the east; undeveloped riparian corridor to the west, and herbaceous scrub/shrub wetland to the north and south.

HYDROLOGY

Surface Water Source: High groundwater; periodic overbank flow from Shields River.

Inundation: ☑ Average Depth: 0.2 **(ft)** Range of Depths: 0-2.0 **(ft)**

Percent of assessment area under inundation: 10 %

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

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

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

Drift and sediment deposits (relic from 2011), surface water, water-stained leaves, soil cracks, drainage patterns, algal crust, sparsely vegetated surface, dry-season water table, geomorphic postion, FAC-neutral

Groundwater Monitoring Wells

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

Well ID	Water Surface Depth (ft)
No Wells	

Additional Activities Checklist:

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

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

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

Hydrology Notes:

Areas of inundation within excavated depressions (created wetland AA). No signs of overbank flooding in 2014. It did not appear that irrigation water had yet to be turned on to the site in July site visit. Site was wetter in 2014 than in previous years, likely due to earlier monitoring and recent precipitation.

VEGETATION COMMUNITIES

Site Easton Ranch

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

Community # 1 **Community Type:** Phleum pratense / Poa pratensis **Acres** 8.82

Species	Cover class	Species	Cover class
Agrostis gigantea	0	Alopecurus pratensis	0
Alyssum alyssoides	0	Bare Ground	0
Bromus carinatus	0	Bromus inermis	3
Carum carvi	1	Chenopodium album	1
Cirsium arvense	0	Cirsium vulgare	0
Cynoglossum officinale	0	Dactylis glomerata	1
Elymus cinereus	0	Elymus repens	0
Equisetum arvense	0	Equisetum hyemale	0
Festuca arundinacea	0	Juncus balticus	0
Lotus corniculatus	1	Medicago lupulina	0
Melilotus officinalis	1	Phleum pratense	5
Poa pratensis	3	Populus tremuloides	1
Potentilla gracilis	0	Ranunculus sp.	0
Rumex crispus	1	Salix exigua	0
Salix sp.	0	Sisyrinchium idahoense	0
Taraxacum officinale	1	Thlaspi arvense	0
Tragopogon dubius	0	Trifolium pratense	0

Comments:

Community # 3 **Community Type:** Carex spp. / **Acres** 0.46

Species	Cover class	Species	Cover class
Agrostis gigantea	0	Carex aquatilis	2
Carex nebrascensis	0	Carex utriculata	5
Cirsium arvense	0	Juncus balticus	1
Juncus effusus	1	Medicago lupulina	0
Mentha arvensis	0	Phleum pratense	0
Populus tremuloides	0	Salix exigua	1
Scirpus microcarpus	1	Trifolium pratense	0

Comments:

Community # 4 **Community Type:** Salix drummondiana / **Acres** 0.14

Species	Cover class	Species	Cover class
Beckmannia syzigachne	2	Carex nebrascensis	3
Carex praegracilis	1	Dactylis glomerata	2
Glyceria grandis	2	Mentha arvensis	1
Pascopyrum smithii	3	Phleum pratense	2
Poa pratensis	1	Ribes lacustre	2
Rosa woodsii	1	Salix bebbiana	1
Salix drummondiana	4	Scirpus microcarpus	2
Urtica dioica	2		

Comments:

Community # 5 **Community Type:** Populus balsamifera / **Acres** 0.69

Species	Cover class	Species	Cover class
Bromus inermis	2	Cirsium arvense	1
Glyceria striata	2	Populus angustifolia	4
Populus balsamifera	4	Salix bebbiana	2
Salix lasiandra	2	Scirpus microcarpus	2
Scutellaria lateriflora	2		

Comments:

Community # 7 **Community Type:** Aquatic macrophytes / **Acres** 0.92

Species	Cover class	Species	Cover class
Algae, green	1	Alisma gramineum	0
Beckmannia syzigachne	1	Carex sp.	1
Eleocharis palustris	0	Glyceria grandis	0
Juncus ensifolius	0	Myriophyllum sp.	0
Open Water	4	Rumex crispus	0
Ruppia maritima	0		

Comments:

Community # 8 **Community Type:** Bromus spp. / Trifolium spp. **Acres** 11.82

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus pratensis	0
Bare Ground	0	Brassica kaber	0
Bromus arvensis	1	Bromus carinatus	0
Bromus inermis	4	Bromus tectorum	1
Carduus nutans	0	Carex aquatilis	0
Carex praegracilis	0	Carex utriculata	0
Carum carvi	1	Cirsium arvense	0
Cirsium vulgare	0	Cynoglossum officinale	0
Dactylis glomerata	0	Deschampsia caespitosa	0
Elymus cinereus	0	Elymus repens	2
Epilobium ciliatum	0	Equisetum arvense	0
Equisetum hyemale	0	Festuca pratensis	0
Fragaria virginiana	0	Glyceria grandis	0
Glycyrrhiza lepidota	0	Hordeum jubatum	0
Juncus balticus	0	Juncus effusus	0
Lotus corniculatus	1	Lycopus asper	0
Medicago lupulina	1	Melilotus officinalis	0
Persicaria lapathifolia	0	Phleum pratense	4
Plantago major	0	Poa pratensis	3
Populus angustifolia	0	Populus balsamifera	0
Potentilla gracilis	0	Rumex crispus	0
Salix lutea	0	Scirpus microcarpus	1
Sinapis arvensis	0	Solidago canadensis	0
Taraxacum officinale	0	Thlaspi arvense	0
Trifolium arvense	0	Trifolium pratense	0
Trifolium repens	0	Vicia americana	0

Comments:

Community # 10 **Community Type:** Bromus inermis / Populus tremuloides **Acres** 0.22

Species	Cover class	Species	Cover class
Bromus inermis	5	Carum carvi	1
Cirsium arvense	0	Cynoglossum officinale	0
Elymus repens	2	Poa pratensis	2
Populus tremuloides	3	Salix sp.	0
Taraxacum officinale	2	Trifolium pratense	1

Comments:

Community # 11 **Community Type:** Juncus spp. / **Acres** 10.43

Species	Cover class	Species	Cover class
Agrostis gigantea	0	Algae, green	0
Alisma gramineum	1	Alnus incana	0
Alopecurus pratensis	2	Bare Ground	0
Beckmannia syzigachne	0	Brassica kaber	1
Bromus carinatus	0	Carex aquatilis	0
Carex praegracilis	0	Carex sp.	0
Carex stipata	1	Carex utriculata	0
Carum carvi	1	Cirsium arvense	0
Cynoglossum officinale	0	Eleocharis palustris	0
Elymus trachycaulus	0	Epilobium ciliatum	0
Equisetum arvense	2	Equisetum hyemale	0
Festuca arundinacea	0	Geum macrophyllum	0
Glyceria grandis	1	Glyceria striata	3
Hordeum jubatum	0	Juncus balticus	2
Juncus effusus	2	Juncus ensifolius	0
Juncus torreyi	1	Lotus corniculatus	0
Lycopus asper	0	Medicago lupulina	0
Melilotus officinalis	0	Mentha arvensis	1
Open Water	1	Phalaris arundinacea	0
Phleum pratense	1	Plantago major	1
Poa palustris	1	Poa pratensis	0
Populus angustifolia	0	Potentilla gracilis	0
Ranunculus aquatilis	0	Rumex crispus	1
Salix amygdaloides	0	Salix bebbiana	0
Salix exigua	0	Salix lutea	0
Salix sp.	0	Scirpus microcarpus	0
Scutellaria galericulata	0	Sisyrinchium idahoense	0
Sisyrinchium idahoense	0	Taraxacum officinale	1
Thlaspi arvense	0	Trifolium pratense	0
Trifolium repens	1	Typha latifolia	1
Vicia americana	0		

Comments:

Total Vegetation Community Acreage **33.5**

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

VEGETATION TRANSECTS

Site: Easton Ranch Date: 7/1/2014 9:19:09 AM

Transect Number: 1 **Compass Direction from Start:** 5

Interval Data:

Ending Station 45 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Bromus inermis	3	Carex aquatilis	0
Carex praegracilis	0	Carum carvi	1
Cirsium arvense	0	Deschampsia caespitosa	1
Juncus balticus	1	Juncus effusus	0
Phleum pratense	3	Plantago major	0
Trifolium pratense	2		

Ending Station 61 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Beckmannia syzigachne	0
Juncus balticus	4	Juncus effusus	5
Juncus ensifolius	2	Phleum pratense	0
Salix lutea	0		

Ending Station 102 **Community Type:** Aquatic macrophytes /

Species	Cover class	Species	Cover class
Algae, green	3	Alisma gramineum	2
Carex sp.	0	Eleocharis palustris	0
Glyceria grandis	0	Juncus ensifolius	0
Myriophyllum sp.	2	Open Water	5
Rumex crispus	1	Ruppia maritima	1

Ending Station 132 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	0	Carex sp.	1
Glyceria grandis	0	Juncus balticus	3
Juncus effusus	4	Juncus ensifolius	2
Lotus corniculatus	0	Phleum pratense	0
Trifolium pratense	1		

Ending Station 197 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Alopecurus pratensis	0	Carum carvi	1
Chenopodium album	0	Elymus repens	1
Medicago lupulina	0	Phleum pratense	5
Poa pratensis	4	Taraxacum officinale	2
Tragopogon dubius	0	Trifolium pratense	3

Ending Station 262 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Algae, green	3	Alisma gramineum	1
Alopecurus pratensis	2	Beckmannia syzigachne	0
Glyceria grandis	0	Juncus balticus	1
Juncus effusus	3	Juncus ensifolius	1
Open Water	5	Phleum pratense	1
Plantago major	0	Poa pratensis	1
Taraxacum officinale	2	Trifolium pratense	2
Typha latifolia	2		

Ending Station 458 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Alopecurus pratensis	0	Bromus inermis	2
Carduus nutans	0	Carum carvi	1
Cirsium arvense	0	Cirsium vulgare	0
Dactylis glomerata	1	Elymus cinereus	1
Equisetum hyemale	0	Glyceria grandis	0
Lotus corniculatus	1	Lycopus asper	0
Phleum pratense	1	Poa pratensis	3
Taraxacum officinale	1	Trifolium pratense	3
Trifolium repens	1		

Ending Station 510 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Agrostis gigantea	3	Juncus balticus	2
Juncus ensifolius	2	Lycopus asper	0
Mentha arvensis	0	Phleum pratense	1
Sisyrinchium idahoense	0	Trifolium pratense	1

Ending Station 560 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus pratensis	4
Carum carvi	1	Cirsium arvense	1
Cynoglossum officinale	0	Phleum pratense	1
Poa pratensis	3	Rumex crispus	0
Sisyrinchium idahoense	0	Taraxacum officinale	1

Ending Station 650 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus pratensis	4
Carex praegracilis	1	Carum carvi	2
Equisetum hyemale	0	Juncus balticus	1
Juncus effusus	1	Potentilla gracilis	0
Sisyrinchium idahoense	0	Trifolium pratense	2

Ending Station 675 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Alopecurus pratensis	2	Carex aquatilis	0
Carum carvi	2	Elymus repens	1
Glycyrrhiza lepidota	0	Lycopus asper	0
Phleum pratense	2	Plantago major	1
Rumex crispus	1	Salix lutea	0
Trifolium pratense	2		

Ending Station 705 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Alisma gramineum	0
Alnus incana	1	Bare Ground	3
Carex aquatilis	1	Cirsium arvense	0
Juncus balticus	1	Juncus ensifolius	0
Lotus corniculatus	1	Open Water	1
Phalaris arundinacea	0	Potentilla gracilis	0
Rumex crispus	1	Salix sp.	1
Sisyrinchium idahoense	0	Taraxacum officinale	0

Ending Station 1290 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Bare Ground	2	Brassica kaber	0
Bromus inermis	2	Carum carvi	2
Cirsium arvense	0	Cirsium vulgare	0
Elymus cinereus	2	Elymus repens	1
Equisetum arvense	0	Equisetum hyemale	0
Juncus balticus	1	Lotus corniculatus	1
Medicago lupulina	1	Phleum pratense	3
Poa pratensis	4	Potentilla gracilis	0
Rumex crispus	1	Taraxacum officinale	1
Trifolium pratense	3	Trifolium repens	2

Ending Station 1351 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Carum carvi	1	Cirsium arvense	0
Cynoglossum officinale	0	Elymus repens	2
Lotus corniculatus	1	Melilotus officinalis	0
Phleum pratense	5	Poa pratensis	4
Populus tremuloides	1	Rumex crispus	0
Taraxacum officinale	1	Trifolium pratense	2

Ending Station 1376 **Community Type:** Bromus inermis / Populus tremuloides

Species	Cover class	Species	Cover class
Bromus inermis	5	Carum carvi	1
Cirsium arvense	0	Cynoglossum officinale	0
Populus tremuloides	3	Salix sp.	1
Taraxacum officinale	1		

Transect Notes:

Transect Number: 2 **Compass Direction from Start:** 185

Interval Data:

Ending Station 40 **Community Type:** Carex spp. /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Carex nebrascensis	2
Carex utriculata	5	Cirsium arvense	0
Juncus balticus	2	Juncus effusus	1
Medicago lupulina	0	Mentha arvensis	0
Phleum pratense	0	Salix exigua	1
Scirpus microcarpus	1	Trifolium pratense	2

Ending Station 60 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Algae, green	1	Alisma gramineum	0
Carex sp.	1	Carex utriculata	1
Eleocharis palustris	0	Equisetum arvense	1
Glyceria grandis	0	Juncus balticus	3
Juncus effusus	1	Juncus ensifolius	1
Mentha arvensis	0	Open Water	5
Salix lutea	1	Trifolium pratense	2

Ending Station 128 **Community Type:** Bromus inermis / Trifolium pratense

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Bromus inermis	3
Carex utriculata	0	Cirsium arvense	0
Equisetum hyemale	0	Juncus balticus	1
Juncus effusus	0	Lotus corniculatus	0
Phleum pratense	2	Poa pratensis	2
Scirpus microcarpus	0	Taraxacum officinale	1
Trifolium pratense	3		

Ending Station 175 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Alnus incana	1
Bare Ground	1	Equisetum arvense	1
Juncus balticus	3	Juncus effusus	2
Lotus corniculatus	1	Melilotus officinalis	1
Phleum pratense	1	Salix lutea	0
Sisyrinchium idahoense	1	Trifolium pratense	3

Ending Station 372 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus inermis	3	Carum carvi	2
Cirsium arvense	0	Equisetum hyemale	0
Juncus balticus	1	Lotus corniculatus	1
Phleum pratense	3	Poa pratensis	4
Potentilla gracilis	0	Ranunculus sp.	0
Sisyrinchium idahoense	0	Taraxacum officinale	1
Trifolium pratense	2		

Ending Station 839 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Bare Ground	0	Bromus carinatus	0
Bromus inermis	4	Carum carvi	2
Cirsium arvense	0	Cirsium vulgare	0
Cynoglossum officinale	0	Elymus cinereus	1
Elymus repens	1	Equisetum hyemale	0
Phleum pratense	4	Taraxacum officinale	1
Thlaspi arvense	0	Trifolium pratense	2
Trifolium repens	1	Vicia americana	0

Ending Station 1290 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Alisma gramineum	1
Beckmannia syzigachne	0	Carex aquatilis	1
Carex stipata	0	Carex utriculata	1
Carum carvi	2	Eleocharis palustris	1
Epilobium ciliatum	0	Equisetum hyemale	1
Festuca arundinacea	1	Geum macrophyllum	0
Glyceria grandis	1	Juncus balticus	3
Juncus effusus	1	Lotus corniculatus	1
Mentha arvensis	0	Open Water	0
Plantago major	0	Poa pratensis	2
Populus angustifolia	1	Ranunculus aquatilis	0
Salix lutea	1	Scirpus microcarpus	0
Scutellaria galericulata	0	Sisyrinchium idahoense	0
Taraxacum officinale	1	Trifolium pratense	1
Trifolium repens	1		

Ending Station 1333 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Alyssum alyssoides	0	Bromus inermis	5
Elymus repens	2	Festuca arundinacea	1
Thlaspi arvense	1		

Transect Number: 3 **Compass Direction from Start:** 95

Interval Data:

Ending Station 33 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Alyssum alyssoides	1	Bare Ground	2
Bromus inermis	3	Carum carvi	1
Cirsium arvense	0	Cirsium vulgare	0
Cynoglossum officinale	0	Elymus cinereus	1
Equisetum arvense	1	Phleum pratense	2
Poa pratensis	2		

Ending Station 137 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Bare Ground	1	Bromus inermis	3
Carum carvi	1	Cirsium arvense	0
Cirsium vulgare	1	Elymus repens	2
Phleum pratense	2	Poa pratensis	3
Rumex crispus	0	Salix lutea	0
Trifolium arvense	1	Trifolium pratense	1

Ending Station 165 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alnus incana	0
Carum carvi	1	Equisetum arvense	1
Juncus balticus	3	Juncus effusus	2
Phleum pratense	2	Salix sp.	1
Taraxacum officinale	1	Trifolium pratense	1

Ending Station 200 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Bromus inermis	2	Carum carvi	2
Cirsium arvense	0	Festuca pratensis	1
Lotus corniculatus	1	Poa pratensis	3
Rumex crispus	0	Thlaspi arvense	1
Trifolium pratense	2	Trifolium repens	1

Ending Station 225 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus inermis	2	Carum carvi	2
Dactylis glomerata	2	Elymus repens	3
Phleum pratense	3	Poa pratensis	2
Sisyrinchium idahoense	0	Trifolium pratense	2

Ending Station 249 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Bare Ground	2	Carum carvi	2
Equisetum arvense	1	Equisetum hyemale	2
Juncus balticus	1	Juncus effusus	0
Phleum pratense	1	Rumex crispus	1
Salix sp.	1	Sisyrinchium idahoense	0
Taraxacum officinale	1		

Ending Station 364 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus carinatus	1	Bromus inermis	1
Carum carvi	3	Cirsium arvense	0
Dactylis glomerata	2	Elymus repens	2
Equisetum arvense	1	Lotus corniculatus	2
Phleum pratense	3	Poa pratensis	3
Sisyrinchium idahoense	0	Thlaspi arvense	1
Trifolium pratense	2		

Ending Station 679 **Community Type:** Juncus spp. /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus pratensis	0
Carex utriculata	1	Elymus trachycaulus	1
Equisetum hyemale	1	Juncus balticus	3
Juncus effusus	2	Juncus ensifolius	0
Mentha arvensis	0	Phleum pratense	1
Potentilla gracilis	1	Rumex crispus	0
Scirpus microcarpus	1	Sisyrinchium idahoense	0
Taraxacum officinale	1	Trifolium pratense	2
Trifolium repens	1	Typha latifolia	0

Ending Station 751 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus inermis	2	Carum carvi	1
Cirsium arvense	0	Equisetum hyemale	1
Lotus corniculatus	2	Medicago lupulina	0
Phleum pratense	2	Poa pratensis	2
Sisyrinchium idahoense	0	Taraxacum officinale	1
Trifolium pratense	1		

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Easton Ranch

Planting Type	#Planted	#Alive	Notes
Red-osier dogwood	250	10	Moderate vigor for observed surviving plants
Sandbar willow	250	30	Good vigor on surviving plants
Thinleaf alder	500	26	Good vigor observed on surviving plants
Willow cuttings	200	40	Moderate survival for observed cuttings

Comments

No systematic sampling method was employed in evaluating planted woody vegeation survival. Survival was tallied as the site was traversed during monitoring activities.

Easton Ranch

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: bird boxes

How many? 9

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Robin	2	F, N	FO, SS, UP, WM
Gray Catbird	2	F	UP, WM
Red-tailed Hawk	1	F, FO	UP, WM
Sandhill Crane	1	F	WM
Song Sparrow	4	FO, N	UP, WM
Tree Swallow	10	F, FO	FO, OW, WM
Yellow Warbler	1	FO	UP

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
Deer Sp.		Yes	No	No	

Wildlife Comments:

Easton Ranch

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
2936	46.057281	-110.638306	5	T-1, start
2945	46.060627	-110.637779	185	T-1, end
2946-2953	46.059727	-110.637505	190	PP-1
2946-2953	46.059727	-110.637505	250	PP-1
2946-2953	46.059727	-110.637505	300	PP-1
2955-2959	46.061054	-110.637291	270	PP-2, pano
2955-2959	46.061028	-110.637207	200	PP-2
2964	46.06139	-110.639229	185	T-2, start
2967-2972	46.061188	-110.639847	100	PP-3, pano
2976	46.060993	-110.640121	170	PP-4a
2993	46.060413	-110.640396	20	PP-4b
2997	46.057594	-110.640343	0	T-2,end
3005	46.059883	-110.640404	90	PP-5
3012	46.032538	-110.382542	0	E-2
3013	46.032516	-110.382573	0	E-1
3014	46.056984	-110.640656	95	T-3, start
3017	46.056175	-110.64048	0	PP-6
3030	46.055286	-110.639137	340	PP-7
3037	46.056114	-110.637924	265	T-3, end
3038	46.033326	-110.381871	0	E-4
3042	46.033259	-110.381894	0	E-3

Comments:

Easton Ranch

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:

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.

Efforts to stabilize the eastern bank of the Shields River adjacent to the Northwest corner of the mitigation site included a combination of bank hardening and installation of willow cuttings. Lateral erosion of the channel has comprimised the rock armouring. The bank is vegetated with a predominance of shallow-rooted species and it does not appear that stabilization has been achieved.

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

Project/Site: Easton City/County: Park Co. Sampling Date: 7/1/2014

Applicant/Owner: MDT State: Montana Sampling Point: E-1

Investigator(s): B Schultz, B Sandefur Section, Township, Range: S 32 T 4N R 9E

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

Subregion (LRR): LRR E Lat: 46.057025 Long: -110.640273 Datum: WGS84

Soil Map Unit Name: Meadowcreek rarely-flooded Nesda complex, 0-2% slopes NWI classification: Upland

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:

VEGETATION - Use scientific names of plant

Tree Stratum Plot size (30 Foot Radius) — Absolute % Cover: — Domiant Species? — Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Carum carvi	5	☐	FACU
Poa pratensis	45	☑	FAC
Taraxacum officinale	30	☑	FACU
Trifolium pratense	20	☑	FACU

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground

Dominance Test worksheet

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet

Total % Cover of:			Multiply by:
OBL species	0	X 1	0
FACW species	0	X 2	0
FAC species	45	X 3	135
FACU species	55	X 4	220
UPL species	0	X 5	0
Column Totals	100 (A)		355 (B)

Prevalence Index = B/A = 3.55

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: E-1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100					Silt Loam	**No redox in upper 12 inches.**

[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 observed.

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 signs of surface or high groundwater hydrology.

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

Project/Site: Easton City/County: Park Co. Sampling Date: 7/1/2014

Applicant/Owner: MDT State: Montana Sampling Point: E-2

Investigator(s): B Schultz, B Sandefur Section, Township, Range: S 32 T 4N R 9E

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

Subregion (LRR): LRR E Lat: 46.057003 Long: -110.640173 Datum: WGS84

Soil Map Unit Name: Meadowcreek rarely-flooded Nesda complex, 0-2% slopes NWI classification: Upland

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:

VEGETATION - Use scientific names of plant

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Carex praegracilis	45	☑	FACW
Juncus balticus	10	☐	FACW
Juncus effusus	10	☐	FACW
Poa pratensis	20	☑	FAC
Sisyrinchium idahoense	5	☐	FACW
Trifolium repens	10	☐	FAC

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground

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	0	X 1	0
FACW species	70	X 2	140
FAC species	30	X 3	90
FACU species	0	X 4	0
UPL species	0	X 5	0
Column Totals	100 (A)		230 (B)

Prevalence Index = B/A = 2.3

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: E-2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/1	80	7.5YR 4/4	20			Silt 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:

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:

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

Project/Site: Easton City/County: Park Sampling Date: 7/1/2014

Applicant/Owner: MDT State: Montana Sampling Point: E-3

Investigator(s): B Schultz, B Sandefur Section, Township, Range: S 32 T 4N R 9E

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

Subregion (LRR): LRR E Lat: 46.058999 Long: -110.63851 Datum: WGS84

Soil Map Unit Name: Meadowcreek rarely-flooded Nesda complex, 0-2% slopes NWI classification: Upland

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:

VEGETATION - Use scientific names of plant

Tree Stratum Plot size (30 Foot Radius) — Absolute % Cover: — Domiant Species? — Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Alopecurus pratensis	10	☐	FAC
Alyssum alyssoides	5	☐	NL
Bromus inermis	20	☑	FAC
Carum carvi	5	☐	FACU
Phleum pratense	20	☑	FAC
Poa pratensis	40	☑	FAC

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground

Dominance Test worksheet

Number of Dominant Species that are OBL, FACW or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (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	90 X 3	270
FACU species	5 X 4	20
UPL species	0 X 5	0
Column Totals	95 (A)	290 (B)

Prevalence Index = B/A = 3.05263

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: E-3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100					Sandy 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:

Soils are moist from recent precipitation. Rocky below 6 inches.

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:

Soils moist from recent precipitation. No saturation or positive signs of wetland hydrology.

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

Project/Site: Easton City/County: Park Sampling Date: 7/1/2014

Applicant/Owner: MDT State: Montana Sampling Point: E-4

Investigator(s): B Schultz, B Sandefur Section, Township, Range: S 32 T 4N R 9E

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

Subregion (LRR): LRR E Lat: 46.059111 Long: -110.638359 Datum: WGS84

Soil Map Unit Name: Meadowcreek rarely-flooded Nesda complex, 0-2% slopes NWI classification: Upland

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:
Data point in excavated basin.

VEGETATION - Use scientific names of plant

Tree Stratum Plot size (30 Foot Radius) — Absolute % Cover: — Domiant Species? — Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Carum carvi	5	☐	FACU
Juncus balticus	50	☑	FACW
Salix amygdaloides	10	☑	FACW
Sisyrinchium idahoense	5	☐	FACW
Taraxacum officinale	5	☐	FACU
Trifolium pratense	10	☑	FACU

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground

Dominance Test worksheet

Number of Dominant Species that are OBL, FACW or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7	% (A/B)

Prevalence Index worksheet

Total % Cover of:			Multiply by:
OBL species	0	X 1	0
FACW species	65	X 2	130
FAC species	0	X 3	0
FACU species	20	X 4	80
UPL species	0	X 5	0
Column Totals	85 (A)		210 (B)

Prevalence Index = B/A = 2.47059

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:

US Army Corps of Engineers — Western Mountains, Valleys, and Coasts - Version 2.0

SOIL

Sampling Point: E-4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	100					Sandy 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:

Soil saturated at 8 inches. Gravelly below 8 inches, assumed redox development.

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): 8

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Easton Ranch **2. MDT project#** ST(X-34(14) **Control#** 4866

3. Evaluation Date 7/1/2014 **4. Evaluators** B Schultz, B Sandefur **5. Wetland/Site# (s)** Creation

6. Wetland Location(s): **T** 4N **R** 9E **Sec1** 32 **T** **R** **Sec2**

Approx Stationing or Mileposts NA

Watershed 10070003 **Watershed/County** Upper Yellowstone Watershed/Park County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 9.98

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 9.98

☐ **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	Excavated	Seasonal/Intermittent	90
Depressional	Aquatic Bed	Excavated	Seasonal/Intermittent	10

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)

Limited agriculture (hay) and a few ranch structures to the east. Undeveloped riparian corridor and herbaceous uplands to north, south, and west. Two species of noxious weeds were present within the AA, but total cover does not exceed 1%. The AA is managed in a natural state, as are most of the lands within 500 feet of the AA.

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

Cirsium arvense and Cynoglossum officinale

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

The AA consists of four constructed wetland cells. The lowest contours of the wetland cells are seasonally inundated and have developed wetland characteristics. The higher elevations lack wetland characteristics and support upland plant communities. The cells are bordered by limited agriculture (hay) and an undeveloped riparian corridor.

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: The AA consists of palustrine emergent wetlands (PEM) and aquatic beds in the deeper depressions.

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

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	
Incidental habitat (list species)	◉ D ○ S	Golden Eagle (S3)
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 MTNHP, 2013 field observations

14C. General Wildlife Habitat Rating:

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

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 ≥ 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 Many shorebirds and waterfowl have been documented using this site from 2010 to 2014.

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**

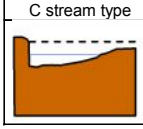
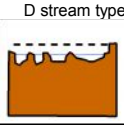
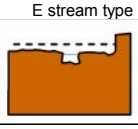
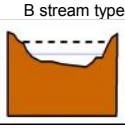
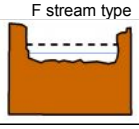
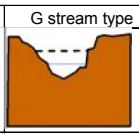
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ○ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

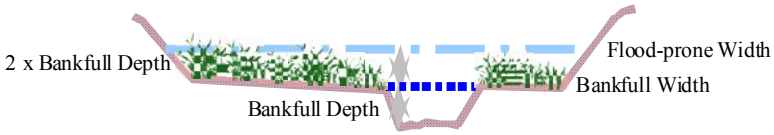
iii. Final Score and Rating: 0 NA **Comments:** Wetland cells are isolated from Shields River with no fish habitat present.

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 133 / **Bankfull width** 28 = **Entrenchment ratio** 4.75

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 receives overbank flow from Shields River during high flow events.

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 **≥ 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: (9.98 acre wetland) * (1 ft. max depth at highwater) = 9.98 acre feet. Areas of shallow observed during the site visit were due to recent precipitation events.

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: There was evidence of ponding and flooding in 2014. There was evidence of flooding/ponding in 2011 and 2012. There was no evidence of ponding or flooding in 2013.

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
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: More wetland species were observed in 2014 likely due to early sampling date and increased seasonal precipitation. Deep-rooted species include bulrush, spikerush, sedges, and rushes.

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: Vegetated area greater than 5 acres with moderate level of biological activity and seasonal hydrology.

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: Ponding was observed on site in 2014.

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: Vegetation is becoming well established with tree populations colonizing the northern mitigation boundary.

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:

Permission is required for access to this site.

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	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	L	.2	1	1.996	☐
C. General Wildlife Habitat	M	.7	1	6.986	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.5	1	4.99	☐
F. Short and Long Term Surface Water Storage	H	.8	1	7.984	☑
G. Sediment/Nutrient/Toxicant Removal	H	.9	1	8.982	☑
H. Sediment/Shoreline Stabilization	M	.6	1	5.988	☐
I. Production Export/Food Chain Support	H	.8	1	7.984	☑
J. Groundwater Discharge/Recharge	M	.7	1	6.986	☐
K. Uniqueness	M	.4	1	3.992	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.499	☐
Totals:		5.65	10	56.387	
Percent of Possible Score			**56.5** %		

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)

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Easton Ranch **2. MDT project#** ST(X-34(14) **Control#** 4866

3. Evaluation Date 7/1/2014 **4. Evaluators** B Schultz, B Sandefur **5. Wetland/Site# (s)** Preservation

6. Wetland Location(s): **T** 4N **R** 9E **Sec1** 32 **T** **R** **Sec2**

Approx Stationing or Mileposts NA

Watershed 10070003 **Watershed/County** Upper Yellowstone Watershed/Park County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 1.1

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 1.1

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☐ **Mitigation Wetlands: post construction**

☑ **Other** Preserved PSS/PFO/PEM Habtiat

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Scrub-Shrub Wetland		Seasonal/Intermittent	10
Riverine	Forested Wetland		Seasonal/Intermittent	20
Riverine	Emergent Wetland		Seasonal/Intermittent	70

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 consists of existing riverine PFO/PSS/PEM wetlands located adjacent to the created depressional wetlands and flood channel. AA and adjacent areas are managed in a natural state, disturbance is low.

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

Cirsium arvense and Cynoglossum officinale

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

AA contains small areas of existing PFO/PSS/PEM wetlands located at the northwest (Shields River) and southcentral ends of the mitigation area. The existing PFO/PEM habitat located at the southern end of the AA receives direct hydrologic inputs from the created flood channel. Both wetland features are bordered by created wetlands and the Shields River riparian corridor.

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: PEM, PFO, and PSS vegetated communties are present on site.

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

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	
Incidental habitat (list species)	◉ D ○ S	Golden Eagle (S3);
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 MTNHP, 2013 field observations.

14C. General Wildlife Habitat Rating:

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

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 ≥ 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 Moderate use of site by moose, deer, golden eagle, and other avian species.

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**

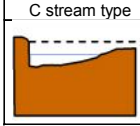
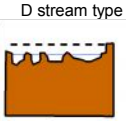
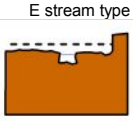
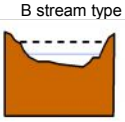
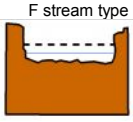
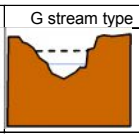
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ○ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

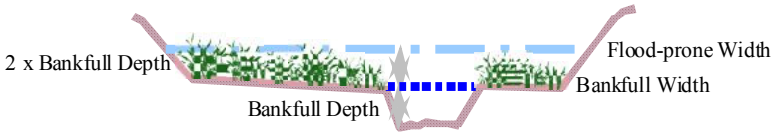
iii. Final Score and Rating: 0 NA **Comments:** No fish habitat on site.

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 133 / **Bankfull width** 28 = **Entrenchment ratio** 4.75

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: Approximately 30% of the preservation AA contains forested and/or scrub/shrub wetland with surface water outlet to the south into relic isolated channel. The Shields River is slightly entrenched at this location.

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 **≥ 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: (1.10 acre of preserved wetland) x (approximate average of 1.0 ft. of inundation during high water) = 1.10 acre feet

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: Wetland vegetation cover exceeds 70%. AA contains restricted 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
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: No shoreline in the project area.

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** .9H

Comments: There is a restricted surface water outlet to the south.

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: Much of the AA was saturated during the site visit in 2014.

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: Site disturbance is low and structural diversity is high.

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:

Permission is required for site access.

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	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	L	.2	1	0.22	☐
C. General Wildlife Habitat	H	.9	1	0.99	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	H	.9	1	0.99	☐
F. Short and Long Term Surface Water Storage	M	.6	1	0.66	☐
G. Sediment/Nutrient/Toxicant Removal	H	1	1	1.1	☑
H. Sediment/Shoreline Stabilization	NA	0	0	0	☐
I. Production Export/Food Chain Support	H	.9	1	0.99	☑
J. Groundwater Discharge/Recharge	M	.7	1	0.77	☑
K. Uniqueness	M	.6	1	0.66	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.055	☐
Totals:		5.85	9	6.435	
Percent of Possible Score			**65** %		

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 Easton Ranch **2. MDT project#** ST(X-34(14) **Control#** 4866

3. Evaluation Date 7/1/2014 **4. Evaluators** B Schultz, B Sandefur **5. Wetland/Site# (s)** Restoration

6. Wetland Location(s): **T** 4N **R** 9E **Sec1** 32 **T** **R** **Sec2**

Approx Stationing or Mileposts NA

Watershed 10070003 **Watershed/County** Upper Yellowstone Watershed/Park County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 1.56

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 1.56

☐ **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	Excavated	Seasonal/Intermittent	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)

Limited agriculture (hay) and ranch structures to the east. Undeveloped riparian corridor and herbaceous uplands to north, south, and west. Two species of noxious weeds were present within the AA, but total cover does not exceed 1%. The AA is managed in a natural state, as are most of the lands within 500 feet of the AA.

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

Cirsium arvense, Cynoglossum officinale

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

The AA consists of one constructed secondary stream channel which bisects the mitigation area. The channel is active during high flow events, is seasonally inundated by shallow ground water early in the growing season and has developed wetland characteristics.

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: Planted shrubs along channel are surviving but have yet to develop a shrub community, emergent vegetation present.

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

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	
Incidental habitat (list species)	◉ D ○ S	Golden Eagle (S3)
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 MTNHP; observed on site in 2013.

14C. General Wildlife Habitat Rating:

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

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 ≥ 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 has frequent deer and moose sightings.

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**

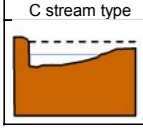
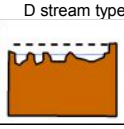
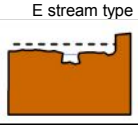
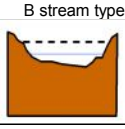
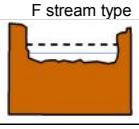
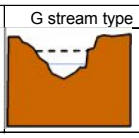
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

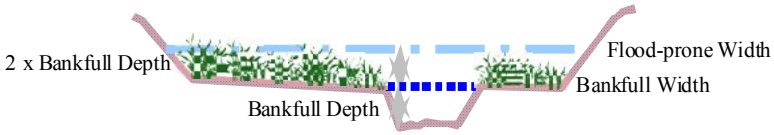
iii. Final Score and Rating: 0 NA **Comments:** Although activated during high-flow events within the Shields River, no permanent fish habitat is present within AA.

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 133 / **Bankfull width** 28 = **Entrenchment ratio** 4.75

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: Outlet is resticted. AA subject to overflow from Shields River and empties into old meanders of the Shields River at the south end of AA.

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 **≥ 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: (1.56 acre of restoration) x (average 1 ft. ponding/flow at high water) = 1.56 acre feet

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: Cover in AA is greater than 70% and outlet is topographically restricted.

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
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

Comments: Increased vegetation development from 2013 to 2014 of species with high stability ratings including Salix, Carex and Juncus.

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: Channel is seasonally inundated and has a restricted outlet at the southern end of the mitigation site.

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: Channel is intermittently inundated by shallow groundwater and high flows from the Shields River.

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: Emergent wetland within seasonal flood channel. Common wetland type within basin with 10-50% of area wetlands similar to

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:

Permission is required for site access.

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	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	L	.2	1	0.312	☐
C. General Wildlife Habitat	M	.7	1	1.092	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.6	1	0.936	☐
F. Short and Long Term Surface Water Storage	M	.6	1	0.936	☐
G. Sediment/Nutrient/Toxicant Removal	H	1	1	1.56	☑
H. Sediment/Shoreline Stabilization	H	.9	1	1.404	☑
I. Production Export/Food Chain Support	M	.7	1	1.092	☑
J. Groundwater Discharge/Recharge	M	.7	1	1.092	☑
K. Uniqueness	M	.4	1	0.624	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.078	☐
Totals:		5.85	10	9.126	
Percent of Possible Score			**58.5** %		

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
Easton Ranch
Park County, Montana

Photo Point 1 – *Photo 1* **Location:** East boundary
Bearing: 190 Degrees **Taken in 2010**

Photo Point 1 – *Photo 2* **Location:** East boundary
Bearing: 250 Degrees **Taken in 2010**

Photo Point 1 – *Photo 1* **Location:** East boundary
Bearing: 190 Degrees **Taken in 2013**

Photo Point 1 – *Photo 2* **Location:** East boundary
Bearing: 250 Degrees **Taken in 2013**

Photo Point 1 – *Photo 1* **Location:** East boundary
Bearing: 190 Degrees **Taken in 2014**

Photo Point 1 – *Photo 2* **Location:** East boundary
Bearing: 250 Degrees **Taken in 2014**

Photo Point 1 – *Photo 3*
Bearing: 300 Degrees
Location: East boundary
Taken in 2010

Photo Point 2
Bearing: 200 Degrees
Location: NE corner of site
Taken in 2010

Photo Point 1 – *Photo 3*
Bearing: 300 Degrees
Location: East boundary
Taken in 2013

Photo Point 2
Bearing: 200 Degrees
Location: NE corner of site
Taken in 2013

Photo Point 1 – *Photo 3*
Bearing: 300 Degrees
Location: East boundary
Taken in 2014

Photo Point 2
Bearing: 200 Degrees
Location: NE corner of site
Taken in 2014

Photo Point 3
Bearing: 140 Degrees
Location: NW corner of site
Taken in 2010

Photo Point 4A
Bearing: 170 Degrees
Location: Shields Bank-DS
Taken in 2010

Photo Point 3
Bearing: 140 Degrees
Location: NW corner of site
Taken in 2013

Photo Point 4A
Bearing: 170 Degrees
Location: Shields Bank-DS
Taken in 2013

Photo Point 3
Bearing: 140 Degrees
Location: NW corner of site
Taken in 2014

Photo Point 4A
Bearing: 170 Degrees
Location: Shields Bank-DS
Taken in 2014

Photo Point 4B **Location:** Shields Bank-upstream
Bearing: 20 Degrees **Taken in 2010**

Photo Point 5 **Location:** West boundary
Bearing: 105 Degrees **Taken in 2010**

Photo Point 4B **Location:** Shields Bank-upstream
Bearing: 20 Degrees **Taken in 2013**

Photo Point 5 **Location:** West boundary
Bearing: 105 Degrees **Taken in 2013**

Photo Point 4B **Location:** Shields Bank-upstream
Bearing: 20 Degrees **Taken in 2014**

Photo Point 5 **Location:** West boundary
Bearing: 105 Degrees **Taken in 2014**

Photo Point 6
Bearing: 0 Degrees
Location: SW corner of site
Taken in 2010

Photo Point 7
Bearing: 340 Degrees
Location: SE corner of site
Taken in 2010

Photo Point 6
Bearing: 0 Degrees
Location: SW corner of site
Taken in 2013

Photo Point 7
Bearing: 340 Degrees
Location: SE corner of site
Taken in 2013

Photo Point 6
Bearing: 0 Degrees
Location: SW corner of site
Taken in 2014

Photo Point 7
Bearing: 340 Degrees
Location: SE corner of site
Taken in 2014

Veg Tran 1 – *Start*
Bearing: 5 Degrees
Location: Veg Com 8 foreground
Taken in 2010

Veg Tran 1 – *End*
Bearing: 180 Degrees
Location: Veg Com 1 foreground
Taken in 2010

Veg Tran 1 – *Start*
Bearing: 5 Degrees
Location: Veg Com 8 foreground
Taken in 2013

Veg Tran 1 – *End*
Bearing: 180 Degrees
Location: Veg Com 1 foreground
Taken in 2013

Veg Tran 1 – *Start*
Bearing: 5 Degrees
Location: Veg Com 8 foreground
Taken in 2014

Veg Tran 1 – *End*
Bearing: 180 Degrees
Location: Veg Com 10 foreground
Taken in 2014

Veg Tran 2 – *Start*
Bearing: 180 Degrees
Location: Veg Com 3 foreground
Taken in 2010

Veg Tran 2 – *End*
Bearing: 0 Degrees
Location: Veg Com 1 foreground
Taken in 2010

Veg Tran 2 – *Start*
Bearing: 180 Degrees
Location: Veg Com 3 foreground
Taken in 2013

Veg Tran 2 – *End*
Bearing: 0 Degrees
Location: Veg Com 1 foreground
Taken in 2013

Veg Tran 2 – *Start*
Bearing: 180 Degrees
Location: Veg Com 3 foreground
Taken in 2014

Veg Tran 2 – *End*
Bearing: 0 Degrees
Location: Veg Com 1 foreground
Taken in 2014

Veg Tran 3 – *Start*
Bearing: 95 Degrees
Location: Veg Com 1 foreground
Taken in 2010

Veg Tran 3 – *End*
Bearing: 265 Degrees
Location: Veg Com 1 foreground
Taken in 2010

Veg Tran 3 – *Start*
Bearing: 95 Degrees
Location: Veg Com 1 foreground
Taken in 2013

Veg Tran 3 – *End*
Bearing: 265 Degrees
Location: Veg Com 1 foreground
Taken in 2013

Veg Tran 3 – *Start*
Bearing: 95 Degrees
Location: Veg Com 1 foreground
Taken in 2014

Veg Tran 3 – *End*
Bearing: 265 Degrees
Location: Veg Com 1 foreground
Taken in 2014

Photo Point 2 – *Panorama*
Compass Bearing: 270-0 Degrees

Location: NE corner of site
Taken in 2010

Photo Point 2 – *Panorama*
Compass Bearing: 270-0 Degrees

Location: NE corner of site
Taken in 2013

Photo Point 2 – *Panorama*
Compass Bearing: 270-0 Degrees

Location: NE corner of site
Taken in 2014

Photo Point 3 – *Panorama*
Compass Bearing: 90-180 Degrees

Location: NW corner of site
Taken in 2010

Photo Point 3 – *Panorama*
Compass Bearing: 90-180 Degrees

Location: NW corner of site
Taken in 2013

Photo Point 3 – *Panorama*
Compass Bearing: 90-180 Degrees

Location: NW corner of site
Taken in 2014

Photo Point 5 – *Panorama*
Compass Bearing: 30-180 Degrees

Location: Western boundary of site
Taken in 2010

Photo Point 5 – *Panorama*
Compass Bearing: 30-180 Degrees

Location: Western boundary of site
Taken in 2013

Photo Point 5 – *Panorama*
Compass Bearing: 30-180 Degrees

Location: Western boundary of site
Taken in 2014

Data Point: E-1
Bearing:
Location: Veg community 8
Taken in 2014

Data Point: E-2
Bearing:
Location: Veg community 11
Taken in 2014

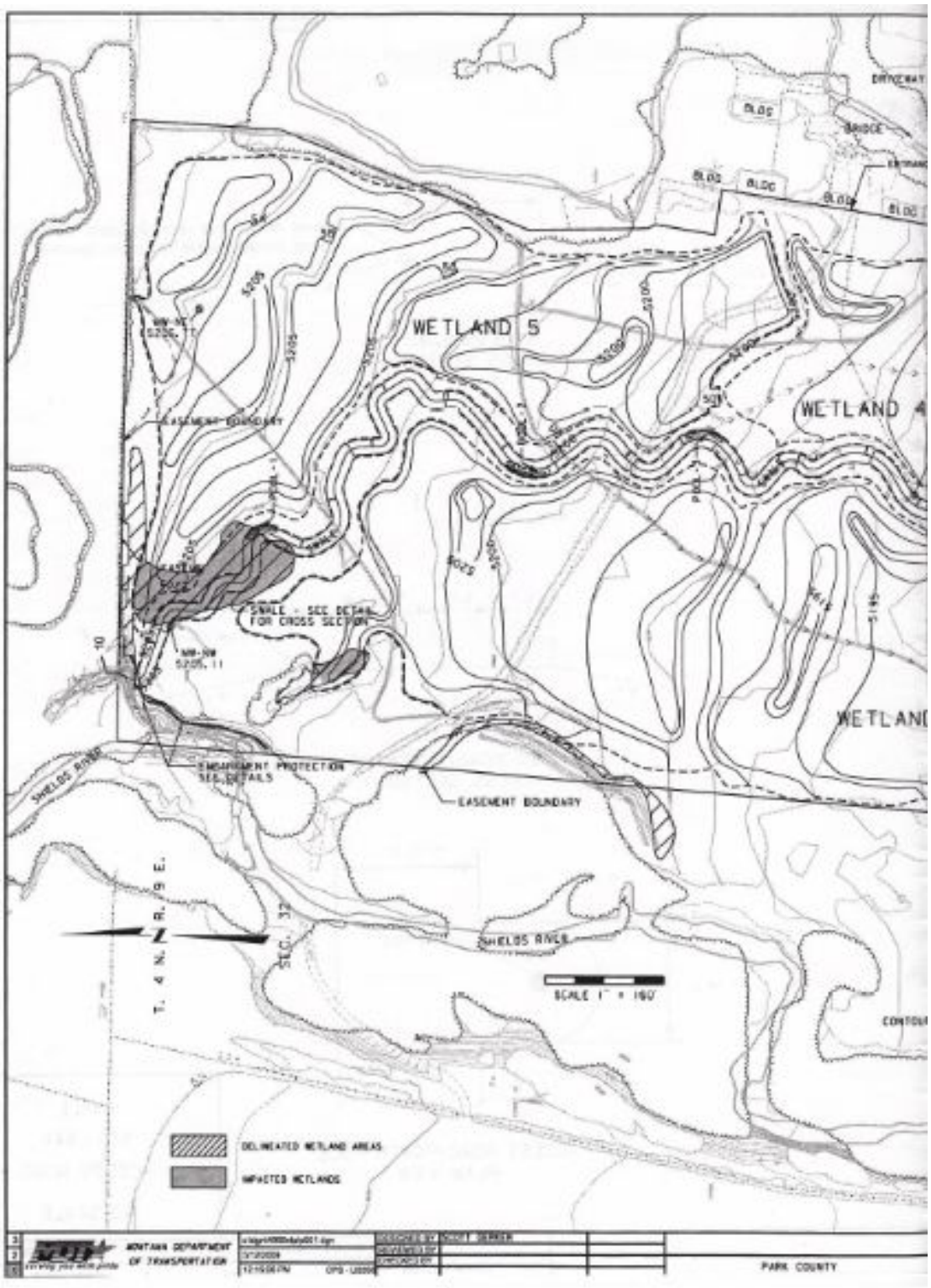
Data Point: E-3
Bearing:
Location: Veg community 8
Taken in 2014

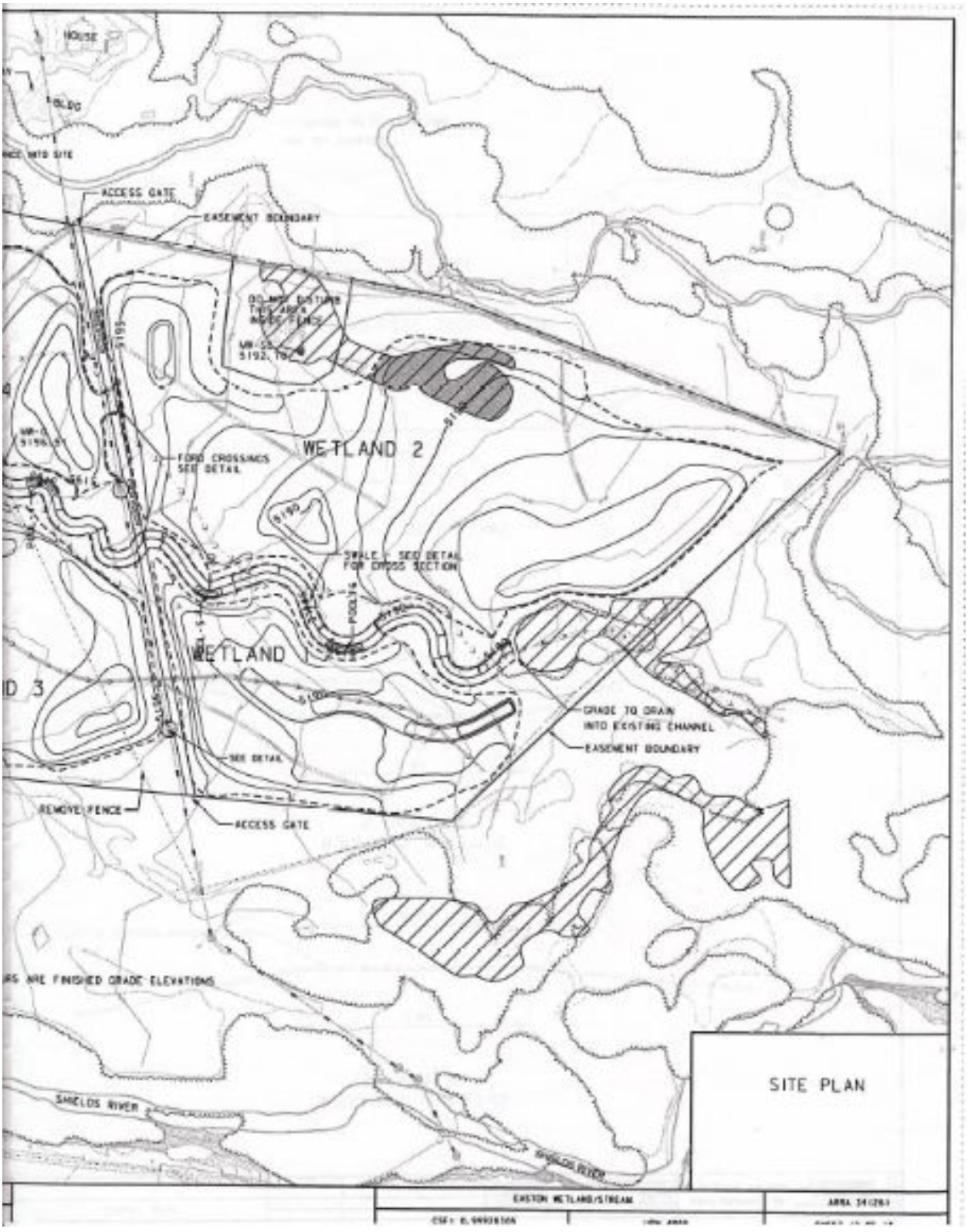
Data Point: E-4
Bearing:
Location: Veg community 11
Taken in 2014

Appendix D

Project Plan Sheets

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana


WETLAND 5
WETLAND 4
WETLAND
EASEMENT BOUNDARY
SCALE - SEE DETAIL FOR CROSS SECTION
EMBANKMENT PROTECTION SEE DETAILS
SHIELDS RIVER
T. 4 N., R. 9 E.
SEC. 32
SCALE 1" = 160'
DELINEATED WETLAND AREAS
IMPACTED WETLANDS
MONTANA DEPARTMENT OF TRANSPORTATION
PARK COUNTY


HOUSE
BLDG
ACCESS GATE
EASEMENT BOUNDARY
WETLAND 2
FORD CROSSINGS SEE DETAIL
SWALE SEE DETAIL FOR CROSS SECTION
WETLAND
GRADE TO DRAIN INTO EXISTING CHANNEL
EASEMENT BOUNDARY
SEE DETAIL
REMOVE FENCE
ACCESS GATE
SHELDS RIVER
SITE PLAN