MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2016

EASTON RANCH MITIGATION SITE
PARK COUNTY, MONTANA



Prepared for:

MONTANA MDT DEPARTMENT OF TRANSPORTATION

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December 2016

MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2016

EASTON RANCH
PARK COUNTY, MONTANA
CONSTRUCTED: 2009

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

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USACE: NWO-2006-90370-MTB

prepared for

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Cover: View looking west at vegetation community Type 11 – *Juncus* spp.

1.0 INTRODUCTION

The 2016 Easton Ranch Wetland Mitigation Monitoring Report presents the results of the seventh year of postconstruction 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 (NRCS) Center in Livingston, Montana. Figures A-2 and A-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 [USACE, 2010], and the 2008 MDT Montana Wetland Assessment Method (MWAM) forms [Berglund and McEldowney, 2008] 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 site is located within a 34.31-acre MDT Wetland Conservation Easement 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 3 miles east of US Highway 89 and 4 miles northeast of Wilsall, Montana, as illustrated in Figure 1-1.

Construction entailed excavating a series of wetland cells and a flood channel that bisects the 32.65-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 that had been impacted by past agricultural practices within the Shields River Watershed. The project objectives include the following:

- Reestablish a previously existing, relic floodplain channel and associated riparian and floodplain wetland areas that total 1.56 acres
- 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

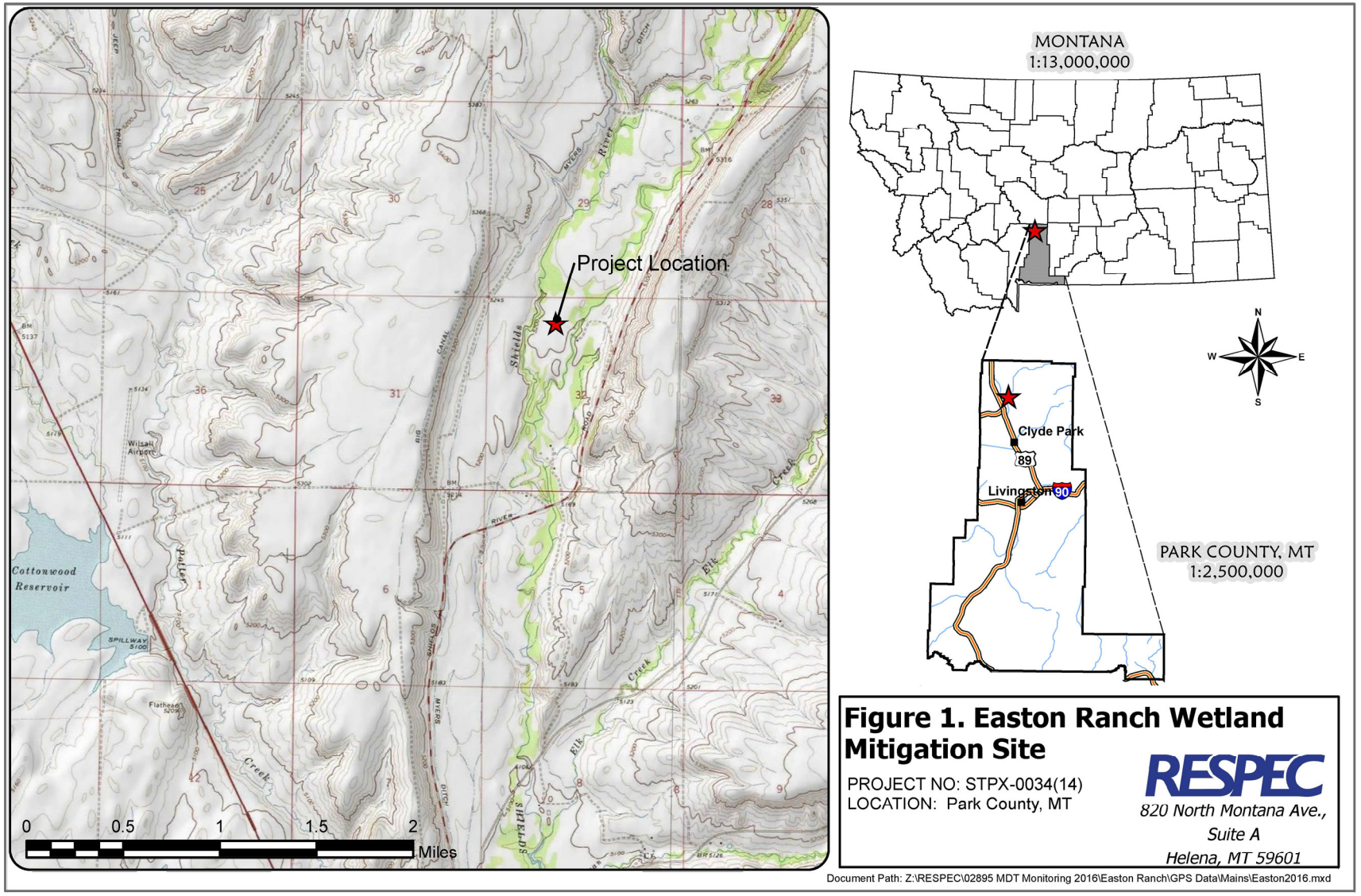


Figure 1-1. Project Location of the Easton Ranch Site.

- Mimic old meander scars and relic flood channels within the 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 1-1.

Table 1-1. Wetland Credit Determination for the Easton Ranch 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
Reestablishment of relic flood channel	Restoration (Reestablishment)	1:1	1.56	1.56
Preservation of existing shrub/scrub and palustrine emergent wetland	Preservation	4:1	1.10	0.28
Establish a 50-foot wide upland buffer	Upland Buffer	5:1	6.43	1.29
Project Impacts	Debit	–	–	(0.67)
Total				27.41

The USACE-approved performance standards are listed below.

1. **Wetland Characteristics** for all of the 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* (1987 Wetland Manual) [Environmental Laboratory, 1987] and the 2010 *Regional Supplement to the Corps of Engineers Manual: Western Mountains, Valleys, and Coast Region* (2010 Regional Supplement; WMVC) [USACE, 2010].
    a. **Wetland Hydrology Success** will be achieved where wetland hydrology is present as per the technical guidelines in the 1987 Wetland Manual and the 2010 Regional Supplement.
        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 to monitor groundwater elevations during the growing season.
        iii. Depressional wetlands that were excavated into the upland areas will be monitored to determine if groundwater hydrology is filling the 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 NRCS definitions for hydric soil [USDA, 2014]) 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. Because 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 by delineating developing wetlands by using the technical guidelines established in the 1987 Wetland Manual and the 2010 Regional Supplement. The following concept of "dominance," as defined in the 1987 Wetland 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 evaluating 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) toward 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 (Appendix D).

   a. Emergent wetlands will compose approximately 70–75 percent of the site.

   b. Scrub/shrub wetland and riparian areas will compose 15–20 percent of the site primarily along the proposed stream corridor and between created wetlands.

   c. Open water will compose 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 using the bio-reference reaches to the north and south of the project area as comparisons because of 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 that is disturbed by project construction must have at least 50 percent aerial cover of nonweed species by the end of the monitoring period.
6. **Weed Control** will be based on annual monitoring of the site to determine weed species and degree of infestation within the site, and control measures based on the monitoring results will be implemented by MDT to minimize and/or eliminate the intrusion of state-listed noxious weed species within the site. 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. In 2016, the south and west fences were removed to improve wildlife movement from the river corridor across the wetland.
8. **Monitoring** of this site will be based on the MDT standard monitoring protocols that are used for all of the MDT wetland mitigation sites for a minimum period of 5 years or longer as determined by the USACE Montana Regulatory Office's review of annual monitoring reports for the site and whether or not the site has met the wetland success criteria.

2.0 METHODS

The seventh year of monitoring was completed on June 24, 2016. Information for the Wetland Mitigation Site Monitoring form and Wetland Determination Data forms was recorded in the field during the site investigation (Appendix B). Monitoring activity sites were located with a global positioning

system (GPS) and are illustrated in Figure A-2 (Appendix A). The information collected included a wetland delineation, vegetation community mapping, vegetation transect data, soil and hydrology data, bird- and wildlife-use documentation, photographic documentation, and a nonengineering 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 forms was assessed at four data points that were established within the project area. The hydrologic indicators were evaluated according to features observed in situ during the site visit. The data were recorded on Wetland Determination Data forms (Appendix B). Hydrologic assessments allow evaluation of mitigation performance standards that address inundation and 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 wetlands. The growing season is defined for purposes of this report as the number of days when a 50 percent probability exists 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 that are defined as wetlands require 15 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria. Soil pits that were 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 forms (Appendix B). No monitoring wells were installed at this site.

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 2016 aerial photograph. Community types were named based on the predominant vegetation species that characterized each mapped polygon (Figure A-3, Appendix A). Percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (< 1 percent), 1 (1–5 percent), 2 (6–10 percent), 3 (11–20 percent), 4 (21–50 percent), and 5 (> 50 percent) (Appendix B). The survival of woody species planted on site were counted and recorded during monitoring. Survival rates are evaluated annually. Additionally, natural recruitment of woody species will be noted.

Temporal changes in vegetation were evaluated through annual assessments of static belt transects established in June 2010 (Figure A-2, Appendix A). Vegetation composition was assessed and recorded along three vegetation belt transects (T-1, T-2, and T-3) that are approximately 10 feet wide and 1,376, 1,333, and 751 feet long, respectively (Figure A-2, Appendix A). 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 A-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 vegetation community polygon data. Photographs were taken at the transect endpoints during the monitoring event (Appendix C).

The *Montana Noxious Weed List* (July 2015), which was prepared by the Montana Department of Agriculture [2015], was used to categorize weeds identified within the site. The location of noxious weeds was noted in the field and mapped on the aerial photograph with noxious weed species color-coded (Figure A-3, Appendix A). The locations are denoted with the symbol "**x**", "▲", or "■," which represent 0–0.1 acre, 0.1–1 acre, or greater than 1 acre in extent, respectively. Cover classes are represented by a T, L, M, and H, which represent less than 1 percent, 1–5 percent, 6–25 percent, and 26–100 percent, respectively.

2.3 SOIL

Soil information was obtained from the *Web Soil Survey for Park County Area* [USDA, 2010] and in situ soil descriptions. Soil cores were excavated by using a hand auger and evaluated according to procedures outlined in the 1987 Wetland 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 US, including special aquatic sites and wetlands, were delineated throughout the project area according to criteria established in the 1987 Wetland Manual and the 2010 Regional Supplement. The technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology described in the 2010 Regional Supplement must be satisfied to delineate a representative area as a wetland. The name and indicator status of plant species was derived from the 2016 national wetland plant list (NWPL) [Lichvar et al., 2016]. Following USACE guidance, the 2016 NWPL scientific and common plant names were used in this report. 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 forms (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 boundaries were surveyed using a resource-grade GPS unit and imported into GIS format. The reported wetlands areas have been calculated using spatial quantification methodology.

2.5 WILDLIFE

Direct observations and other positive indicators of use by mammal, reptile, amphibian, and bird species were recorded on the Wetland Mitigation Site Monitoring form during the site visit. Indirect-use indicators, including tracks, scat, burrows, eggshells, skins, and bones, were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive wildlife species list of animals that were observed from 2010 through 2016 was compiled for this report.

2.6 FUNCTIONAL ASSESSMENT

The 2008 MDT MWAM was used to evaluate functions and values on the site from 2010 through 2016. This method provides an objective means of assigning an overall rating to wetlands and provides regulators with 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. MWAM forms were completed for three separate assessment areas (AA) within the mitigation site (Appendix B).

2.7 PHOTOGRAPHIC DOCUMENTATION

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

2.8 GLOBAL POSITIONING SYSTEM DATA

Site features and survey points were collected using a resource-grade (± 1 meter) Trimble R1 GNSS GPS receiver and companion Android tablet during the 2016 monitoring season. The collected data were then transferred to a personal computer, imported into GIS, and projected in Montana State Plane Single Zone NAD 83 meters. Site features and survey points that were located with GPS included wetland boundaries, fence boundaries, photo points, transect endpoints, 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 examination was cursory and did not constitute an engineering-level structural inspection.

3.0 RESULTS

3.1 HYDROLOGY

Climate data from the meteorological station at Wilsall 8 ENE, Montana (249023), recorded an average annual precipitation rate of 20.2 inches from April 1957 to August 2016 [Western Region Climate

Center, 2016]. The recorded annual precipitation rate was 24.15 inches (2010), 18.03 inches (2011), 16.34 inches (2012), 21.43 inches (2013), 20.10 inches (2014), and 17.40 inches (2015). This data indicates 2010 and 2013 received above-average precipitation with 2011, 2012, and 2015 exhibiting below-average precipitation. The historic precipitation average from January to August was 15.0 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), 18.14 inches (2014), 13.71 inches (2015) and 11.32 inches (2016). This dataset corroborates that 2010 and 2014 received above-average precipitation while indicating that precipitation before and during the growing season for 2011 through 2013 and 2015 through 2016 was below 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 lower-than-average precipitation levels over the past several years have undoubtedly decreased groundwater levels in the mitigation site and the entire Shields Valley.

The irrigation diversion system located upgradient of the wetland cells was closed during the 2010–2015 investigations. Per communication with Ranch Manager Josh Huttinger in 2016, the eastern area was flood irrigated in June and July of 2013. In 2016, irrigation water was released onto the eastern portion of the site twice during the spring and summer months. During the 2016 monitoring, wetland soils were either saturated to the surface or inundated. Upland areas along the northern portion of the site were also saturated. Soils within the channel depressions were saturated as well. Approximately 15 percent of the site was inundated with surface water during the 2016 investigation at depths that ranged from 0 to 1.5 feet. The average depth was 0.1 foot, and the depth at the emergent vegetation/open-water boundary was 0.5 feet. Inundated areas were located within the low contours of the excavated depressions within wetland Cells 2, 4, and 5. Wetland Cells 1 and 3 were saturated to the surface. Unlike the 2011 monitoring event at this site, which revealed recent scour holes, sediment deposits, wrack lines, watermarks, and other signs of contemporary inundation, no signs have been found 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. No hydrologic indicators were observed at DP-1U and DP-2U. DP-1W and DP-2W were located in areas that met the wetland criteria. Primary wetland hydrology indicators included soil saturation at wetland data point DP-2W, which is located within the preserved channel. Secondary wetland hydrology indicators at this data point included the FAC-neutral test and geomorphic position. Primary hydrologic indicators included saturation and oxidized rhizospheres along living roots at DP-1W, which is located in an excavated wetland cell in the south-central part of the site. Additional hydrological indicators that were observed in various wetland areas of the Easton Ranch site included shallow surface water, saturation, sediment deposits, and dry season water table. Shallow surface water was observed within most of the wetlands along the eastern portion of the mitigation site. Additionally, soils were also saturated across upland community Type 13 – *Bromus* spp./*Phleum pratense*, which is located in the northeastern corner of the site and was intended to be a created wetland area. A decrease in open water in 2016 across the southern portion of the site may be the result of decreased regional precipitation rates before the site investigation.

The 2011 spring runoff levels and duration were high because 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 not present in the channel during the June 2016 site visit; however, MDT staff noted water in the channel during a late April site visit. In some small areas along the channel, the fabric was exposed, but the banks were secure, and erosion was minor overall.

3.2 VEGETATION

Monitoring year 2016 marked the seventh year of monitoring on the Easton Ranch site. A total of 22 new plant species were observed across the site in 2016 for a total of 170 plant species since 2010; Table 3-1 lists the plant species observed at this site. Vegetation plant communities were mapped and named by plant composition and dominance. The composition of each community is listed on the Wetland Mitigation Site Monitoring form (Appendix B). The community boundaries are shown on Figure A-3 (Appendix A).

Four upland and seven wetland community types were observed on the site in 2016. The upland communities include the following:

- Type 1 – *Phleum pratense*/*Poa pratensis*
- Type 8 – *Bromus* spp./*Trifolium* spp.
- Type 13 – *Bromus* spp./*Phleum pratense*
- Type 10 – *Bromus inermis*/*Populus tremuloides.*

The wetland communities include the following:

- Type 3 – *Carex* spp.
- Type 4 – *Salix drummondiana*
- Type 5 – *Populus balsamifera*
- Type 7 – Aquatic Macrophytes
- Type 11 – *Juncus* spp./*Glyceria* spp.
- Type 12 – *Eleocharis palustris*/*Typha latifolia*
- Type 14 – *Juncus* spp./*Populus balsamifera*.

These communities are discussed in this section and are shown on Figure A-3 (Appendix A).

Table 3-1. Vegetation Species Observed From 2010 Through 2016 at the Easton Ranch Site (Page 1 of 4)

Scientific Names	Common Names	WMVC Indicator Status[a]
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 arundinaceus	**Creeping Meadow-Foxtail**	**FAC**
Alopecurus pratensis	Field Meadow-Foxtail	FAC
Alyssum alyssoides	Pale Alyssum	NL
Amaranthus retroflexus	Red-Root	FACU
Arctium sp.	**Burrdock**	**NL**
Asclepias speciosa	Showy Milkweed	FAC
Astragalus cicer	**Cicer Milkvetch**	**NL**
Avena fatua	Wild Oats	NL
Bare Ground	Bare Ground	NL
Bassia scoparia	Mexican-Fireweed	FAC
Beckmannia syzigachne	American Slough Grass	OBL
Berteroa incana	**Hoary False Alyssum**	**NL**
Brassica kaber	Brassica kaber	NL
Brassica napus	Turnip	NL
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 atherodes	**Wheat Sedge**	**OBL**
Carex aurea	Golden-Fruit Sedge	FACW
Carex bebbii	**Bebb's Sedge**	**OBL**
Carex limosa	Mud Sedge	OBL
Carex nebrascensis	Nebraska Sedge	OBL
Carex pachystachya	**Thick-Head Sedge**	**FAC**
Carex parryana	Parry's Sedge	FACW
Carex pellita	**Woolly Sedge**	**OBL**
Carex praegracilis	Clustered Field Sedge	FACW
Carex rostrata	Swollen Beaked Sedge	OBL
Carex scoparia	Pointed Broom Sedge	FACW
Carex sp.	Sedge	NL
Carex stipata	Stalk-Grain Sedge	OBL

Table 3-1. Vegetation Species Observed From 2010 Through 2016 at the Easton Ranch Site (Page 2 of 4)

Scientific Names	Common Names	WMVC Indicator Status[(a)]
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
Cicuta douglasii	**Western Water-Hemlock**	**OBL**
Cirsium arvense	Canadian Thistle	FAC
Cirsium douglasii	Douglas' Thistle	OBL
Cirsium vulgare	Bull Thistle	FACU
Conium maculatum	**Poison-Hemlock**	**FAC**
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
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
Equisetum laevigatum	**Smooth Scouring-Rush**	**FACW**
Festuca arundinacea	Tall 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

Table 3-1. Vegetation Species Observed From 2010 Through 2016 at the Easton Ranch Site (Page 3 of 4)

Scientific Names	Common Names	WMVC Indicator Status[(a)]
Juncus ensifolius	Dagger-Leaf Rush	FACW
Juncus longistylis	**Long-Style Rush**	**FACW**
Juncus nevadensis	Sierran Rush	FACW
Juncus tenuis	Lesser Poverty Rush	FAC
Juncus torreyi	Torrey's Rush	FACW
Lappula occidentalis	Flatspine Stickseed	NL
Larix occidentalis	Western Larch	FACU
Lepidium campestre	**Field Pepperweed**	**NL**
Lepidium perfoliatum	Clasping Pepperwort	FACU
Leymus cinereus	Great Basin Lyme Grass	FAC
Lotus corniculatus	Garden Bird's-Foot-Trefoil	FAC
Lupinus argenteus	**Silvery Lupine**	**NL**
Lycopus asper	Rough Water-Horehound	OBL
Medicago lupulina	Black Medick	FACU
Medicago sativa	Alfalfa	UPL
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
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 compressa	**Flat-Stem Blue Grass**	**FACU**
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
Potamogeton gramineus	Grassy Pondweed	OBL
Potamogeton praelongus	White-Stem Pondweed	OBL
Potentilla anserina	Silverweed	OBL
Potentilla gracilis	Graceful Cinquefoil	FAC
Prunus virginiana	Choke Cherry	FACU
Ranunculus aquatilis	White Water-Crowfoot	OBL
Ranunculus macounii	**Macoun's Buttercup**	**OBL**
Rhamnus alnifolia	Alder-Leaf Buckthorn	FACW
Ribes lacustre	Bristly Black Gooseberry	FAC
Rosa woodsii	Woods' Rose	FACU

Table 3-1. Vegetation Species Observed From 2010 Through 2016 at the Easton Ranch Site (Page 4 of 4)

Scientific Names	Common Names	WMVC Indicator Status[(a)]
Rumex crispus	Curly Dock	FAC
Rumex salicifolius	**Willow Dock**	**FACW**
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
Schedonorus pratensis	Meadow False Rye Grass	FACU
Scirpus microcarpus	Red-Tinge Bulrush	OBL
Scirpus pallidus	Pale Bulrush	OBL
Scutellaria galericulata	Hooded Skullcap	OBL
Scutellaria lateriflora	Mad Dog Skullcap	FACW
Silene latifolia	**White Cockle or Campion**	**NL**
Sinapis arvensis	Corn Mustard	NL
Sisymbrium altissimum	Tall Hedge-Mustard	FACU
Sisymbrium loeselii	**Small Hedge Mustard**	**NL**
Sisyrinchium idahoense	Idaho Blue-Eyed-Grass	FACW
Solidago canadensis	Canadian Goldenrod	FACU
Solidago gigantea	**Late Goldenrod**	**FACW**
Sonchus arvensis	Field Sow-Thistle	FACU
Stachys palustris	**Hairy Hedge-Nettle**	**FACW**
Stellaria graminea	Grass-Leaf Starwort	FACU
Symphyotrichum sp.	Aster	NL
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
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**
Xanthium strumarium	Rough Cockleburr	FAC

(a) 2016 NWPL [Lichvar et al., 2016].
New species that were identified in 2016 are **bolded.**

Upland community Type 1 – *Phleum pratense/Poa pratensis* was identified on 8.25 acres of higher elevation areas that surround the constructed wetland cells and channel (Figure A-3, Appendix A). The 0.5-acre decrease in 2015 was a result of updating the project boundary to correspond with the most recent rectified aerial imagery. The community was dominated by herbaceous species including common Timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), caraway (*Carum carvi*), creeping wild rye (*Elymus repens*), orchard grass (*Dactylis glomerata*), and common dandelion (*Taraxacum officinale*).

Wetland community Type 3 – *Carex* spp. encompassed 0.44 acre in the preexisting 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*), Nebraska sedge (*Carex nebrascensis*), lamp rush (*Juncus effusus*), narrow-leaf willow (*Salix exigua*), and red-tinged bulrush (*Scirpus microcarpus*).

Wetland community Type 4 – *Salix drummondiana* was identified in a 0.14-acre area in the northwest corner of the site near the bank of the Shields River. The area encompassed a preexisting scrub-shrub wetland associated with an old flood-channel meander scar of the Shields River. Dominant species included Drummond's willow (*Salix drummondiana*), western-wheatgrass (*Pascopyrum smithii*), and Nebraska sedge. 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 preexisting, undisturbed, forested, scrub/shrub wetland located on 0.63 acre 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 an excavated depression with the longest duration of surface water and supports semi-permanent open water. One depression was identified as community Type 7 across the site and was located within the eastern portion of the site (south of the access road) where a higher seasonal groundwater table is sustained. The community characterized approximately 0.10 acre of the site. The wetland has been classified as an aquatic bed community since 2011, which is 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 dominant species were green algae (protist) and sedges (*Carex* sp.), with lower covers of American sloughgrass, water-milfoil (*Myriophyllum sp*.), broad-leaf cattails (*Typha latifolia*), American mannagrass, creeping spike-rush *(Eleocharis palustris*), and beaked ditch-grass (*Ruppia maritima*). A second depression (approximately 0.0–0.68 acre) that existed in 2015 was replaced with community Type 12 – *Eleocharis palustris*/*Typha latifolia* in 2016.

Upland community Type 8 – *Bromus* spp./*Trifolium* spp. was identified in an area that was previously mapped as upland community Type 13 - *Bromus* spp./*Phleum pratense*. The vegetation cover included a dominance of smooth brome and several clover species, specifically red clover (*Trifolium pratense*)

and alsike clover (*Trifolium hydridum*). This community type was identified in only one area and represented 0.28 acre of upland located within the excavated footprint of wetland Cell 5.

Upland community Type 13 – *Bromus* spp./*Phleum pratense* was identified on 11.89 acres of upland located within the excavated footprint. This community replaced most of community Type 8 in 2015 as primary colonizing species decreased in dominance and more persistent, perennial plants increased in cover. The vegetation cover increased notably within this community between 2013 and 2015. This community increased in size by 0.4 acre since 2014, primarily because of adjacent wetland habitat contracting into the lower elevations of this community. The community was dominated by smooth brome, common Timothy, Kentucky bluegrass, and creeping wild rye.

Upland community Type 10 – *Bromus inermis*/*Populus tremuloides* was identified on 0.22 acre 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 2016. Other species observed were caraway, red clover, creeping wild rye, common Timothy, and Kentucky bluegrass.

Wetland community Type 11 – *Juncus* spp./*Glyceria* spp. was identified on 9.10 acres of the constructed depressions and floodplain channel. This community replaced community Type 6 – *Beckmannia syzigachne* as primary colonizing species decreased in 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 2016. This diverse community type was dominated by rush species, including Baltic rush (*Juncus balticus*), lamp rush (*Juncus effusus*), lesser poverty rush (*Juncus tenuis*), and fowl manna grass (*Glyceria striata*), and/or American manna grass. Changes in the vegetation within this community type, primarily within the south-central portion of the project or wetland Cell 3, include a dominance of woody species, primarily young balsam cottonwood, which represent 0.80 acre of a new community type.

Wetland community Type 12 – *Eleocharis palustris/Typha latifolia* was identified in 2015 in one 0.11-acre excavated depression within community Type 11 – *Juncus* spp., which replaced a small area of community Type 7 – Aquatic Macrophytes as species dominance transitioned from aquatic macrophytes to common spike-rush and broad-leaf cat-tail. In 2016, community Type 12 was identified as replacing another community Type 7 – Aquatic Macrophytes (0.68 acre), which was also within community Type 11, which was located in a depression near the southern site boundary. This newly characterized community was observed in 2015 and 2016 and was dominated by common spike-rush, broad-leaf cat-tail, American sloughgrass, and Northwest Territory sedge.

Wetland community Type 14 – *Juncus spp./Populus balsamiflora* was identified in 2016 in one 0.80-acre excavated depression within community Type 11. Natural recruitment of young balsam cottonwood root suckers and other woody species represent approximately 30 percent of the vegetation cover across this portion of the wetland cell. Other woody species included narrow-leaf cottonwood, yellow willow (*Salix lutea*), narrow-leaf willow, and speckled alder (*Alnus incana*). A mix of Baltic rush and lamp rush were the dominant herbaceous species with lesser amounts of Kentucky

bluegrass, American wild mint (*Mentha arvensis*), silverweed (*Potentilla anserina*), Nebraska sedge, and spread bent grass (*Agrostis stolonifera*).

In general, the site has declined in wetland acreage since initial monitoring in 2010. Portions of the project area have experienced reduced hydrology and a transition from one wetland community to a slightly drier or different wetland community type. Community Type 11 – *Juncus* spp./*Glyceria* spp. (previously Type 6 – *Beckmannia syzigachne)* decreased in size from 10.43 acres in 2014 to 9.9 acres in 2015 to 9.10 acres in 2016. However, this change is to be expected because American sloughgrass is a cool-season annual or short-lived perennial grass and is typically replaced by more permanent, long-lived perennial species such as Baltic rush. Wetland community Type 14 – *Juncus* spp./*Populus balsamifera* occurs within portions of community Type 11, which indicates a shift from a dominance of emergent vegetation to a dominance of woody hydrophytic species in areas closer to the Shields River because of overland flows that occurred in 2011. The wetland boundaries have not changed since the 2015 delineation. However, a slight shift occurred in wetland lengths along the transects where the wetland lines were verified in 2016.

The below-average natural precipitation cycles have affected the wetland development. The floodplain channel was designed to receive water from the Shields River flood events, and the northern channel is the source of this hydrology; both depend on snow and rain events. The below-average precipitation levels noted during the past years have resulted in lower creek levels, lower groundwater levels, and reduced surface water across the site.

The overall percent cover of hydrophytic vegetation in the constructed floodplain has declined in the last few years, which reduced 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 site in 2016 (Figure A-2, Appendix A). The data recorded on T-1 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in tabular and graphical formats in Table 3-2 and Charts 3-1 and 3-2, respectively. The transect ends were photographed (Appendix C). T-1 extends 1,376 feet (1,072 feet in 2010 because of field error during the 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*, 13 – *Bromus* spp./*Phleum pratense,* 8 – *Bromus* spp./*Trifolium* spp., and 10 – *Bromus inermis/Populus termuloides*, and wetland community Types 7 – Aquatic Macrophytes and 11 – *Juncus* spp./*Glyceria* spp. Wetland community Type 11 replaced wetland community Type 6 in 2014 because of the continued development of wetland vegetation within these excavated depressions. Hydrophytic vegetation communities composed 22.7 percent of T-1 in 2016, which was a slight increase of 0.4 percent since 2015.

Data collected on T-2 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in tabular and graphic formats in Table 3-3 and Charts 3-3 and 3-4, respectively. The endpoints of T-2 were photographed (Appendix C). Wetland Types 3 – *Carex* spp., 11 – *Juncus* spp./*Glyceria* spp., and 14 – *Juncus* spp./*Populus balsamifera* and upland Types 1 – *Phleum pratense*/*Poa pratensis* and 13 – *Bromus* spp./*Phleum pratense* were identified along this transect. Community Type 14 was identified in 2016 as a result of a dominance of balsam cottonwood root suckers mixed with rush species (*Juncus*

spp.) within a portion of wetland Cell 3. Balsam cottonwood plants ranged in height from 18 to 32 inches tall and represented approximately 30 percent of the total cover. Other woody plants included narrow-leaf cottonwood, yellow willow, specked alder, and narrow-leaf willow. Hydrophytic vegetation communities composed 40.4 percent of T-2 in 2016, which was a slight increase from 40 percent in 2015. An increase of five hydrophytic species, for a total of 41 species, was documented along T-2 in 2016.

Table 3-2. Data Summary for T-1 From 2010 Through 2016 at the Easton Ranch Site

Monitoring Year	2010	2011	2012	2013	2014	2015	2016
Transect Length (feet)	**1,072**	**1,376**	**1,376**	**1,376**	**1,376**	**1,376**	**1,376**
Vegetation Community Transitions Along Transect	11	11	12	12	14	14	14
Vegetation Communities Along Transect	3	4	4	4	5	5	6
Hydrophytic Vegetation Communities Along Transect	1	2	2	2	2	2	2
Total Vegetative Species	33	18	34	44	53	57	54
Total Hydrophytic Species	15	19	20	29	33	37	34
Total Upland Species	18	19	14	15	20	20	20
Estimated % Total Vegetative Cover	65	70	80	85	85	85	85
Estimate % Unvegetated	35	30	20	15	15	15	15
% Transect Length Comprising Hydrophytic Vegetation Communities	28.0	17.0	14.7	17.0	23.5	22.2	22.7
% Transect Length Comprising Upland Vegetation Communities	70.0	83.0	82.5	83.0	76.5	77.8	77.3
% Transect Length Comprising Unvegetated Open Water	2.5	0.0	2.8	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	0.0	0.0	0.0	0.0	0.0	0.0	0.0

T-3 was established west to east across the constructed cells and channel in the south half of the site (Figure A-2, Appendix A). During the 2015 field survey, an error in the starting point of T-3 was identified and later confirmed using GIS. The length of T-3 was corrected to 732 feet to correspond with field observations and the most recent rectified aerial imagery and the new project boundary. T-3 data (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in tabular and graphic formats in Table 3-4 and Charts 3-5 and 3-6, respectively. Photographs of the endpoints of T-3 are located in Appendix C. The transect intervals intercepted upland community Types 1 – *Phleum pratense/Poa pratensis* and 13 – *Bromus* spp./*Phleum pratense* and wetland community Type 11 – *Juncus* spp./*Glyceria* spp. Hydrophytic vegetation composed 44.4 percent of T-3 in 2016, which was a slight increase from 43.3 percent in 2015. Hydrophytic vegetation was not observed in the restored stream channel at the point that T-3 transected the channel; however, DP-2W is located along the channel, and soils were saturated with a dominance of hydrophytic vegetation. Water was noted in the channel by MDT staff in late April, but lower precipitation for the area and the continuing drying trend for the area has likely resulted in a transition to an upland vegetation community within portions of the channel.

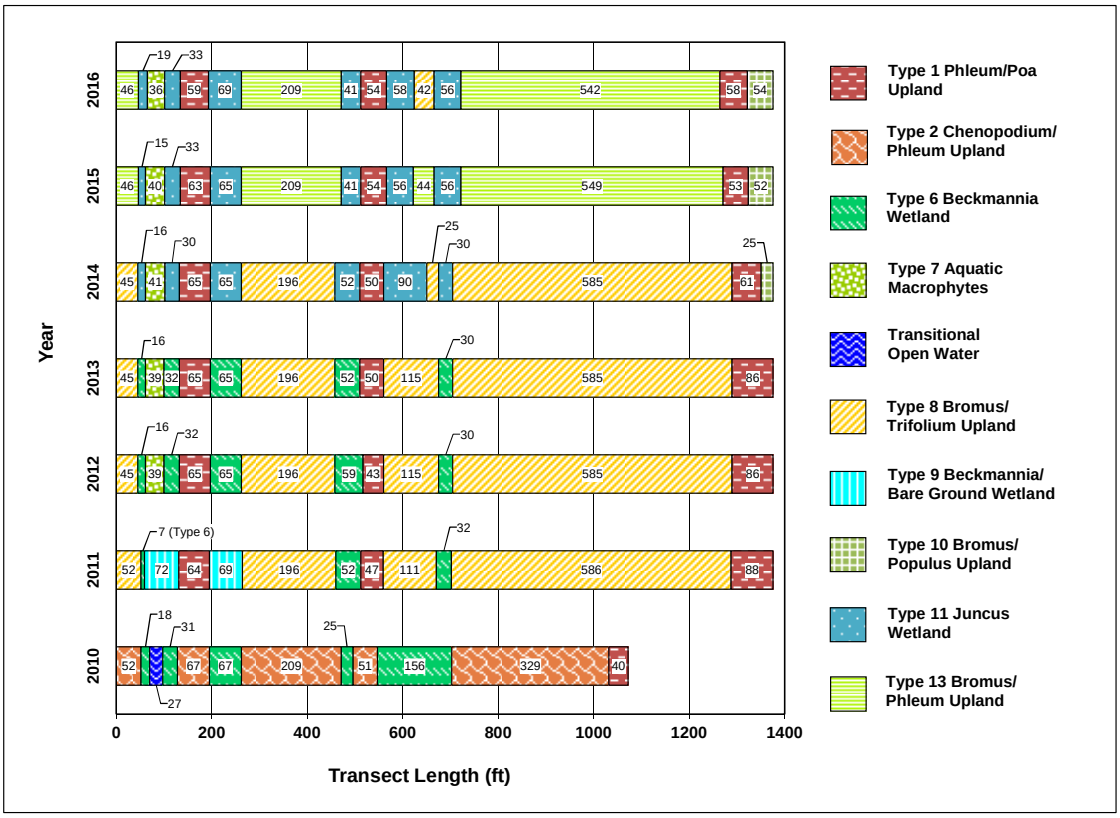


Chart 3-1. Transect Maps Showing Community Types on T-1 From Start/South (0 Foot) to Finish/North (1,072 Feet in 2010 and 1,376 Feet From 2011 Through 2016) at the Easton Ranch Site.

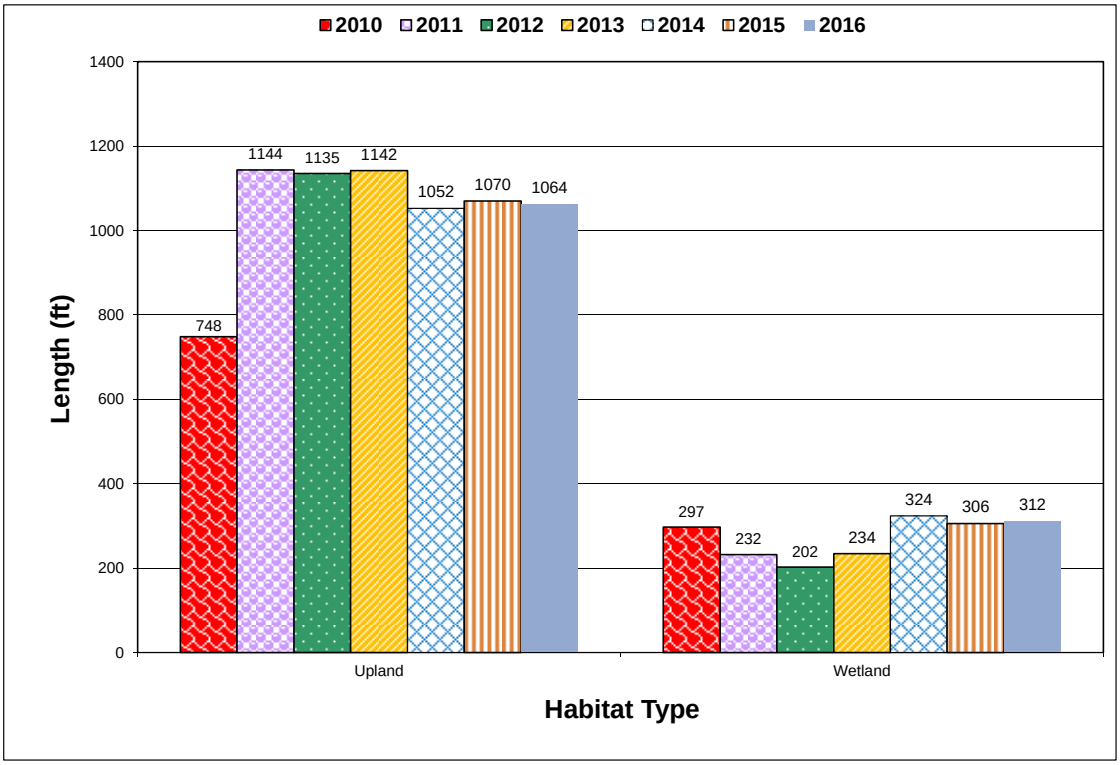


Chart 3-2. Length of Habitat Types Within T-1 From 2010 Through 2016 at the Easton Ranch Site.

Table 3-3. Data Summary for T-2 From 2010 Through 2016 at the Easton Ranch Site

Monitoring Year	2010	2011	2012	2013	2014	2015	2016
Transect Length (feet)	**1,333**	**1,333**	**1,333**	**1,333**	**1,333**	**1,333**	**1,333**
Vegetation Community Transitions Along Transect	11	8	7	7	7	8	10
Vegetation Communities Along Transect	4	4	4	4	4	4	5
Hydrophytic Vegetation Communities Along Transect	2	2	2	2	2	2	3
Total Vegetative Species	35	38	42	45	52	54	61
Total Hydrophytic Species	17	22	29	32	35	36	41
Total Upland Species	18	16	13	13	17	18	20
Estimated % Total Vegetative Cover	65	75	80	85	85	85	85
Estimate % Unvegetated	35	25	20	15	15	15	15
% Transect Length Comprising Hydrophytic Vegetation Communities	38.7	41.0	39.5	38.9	41.9	40.0	40.4
% Transect Length Comprising Upland Vegetation Communities	61.3	59.0	60.5	61.1	58.1	60.0	59.6
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	0.0	0.0	0.0	0.0	0.0	0.0	0.0

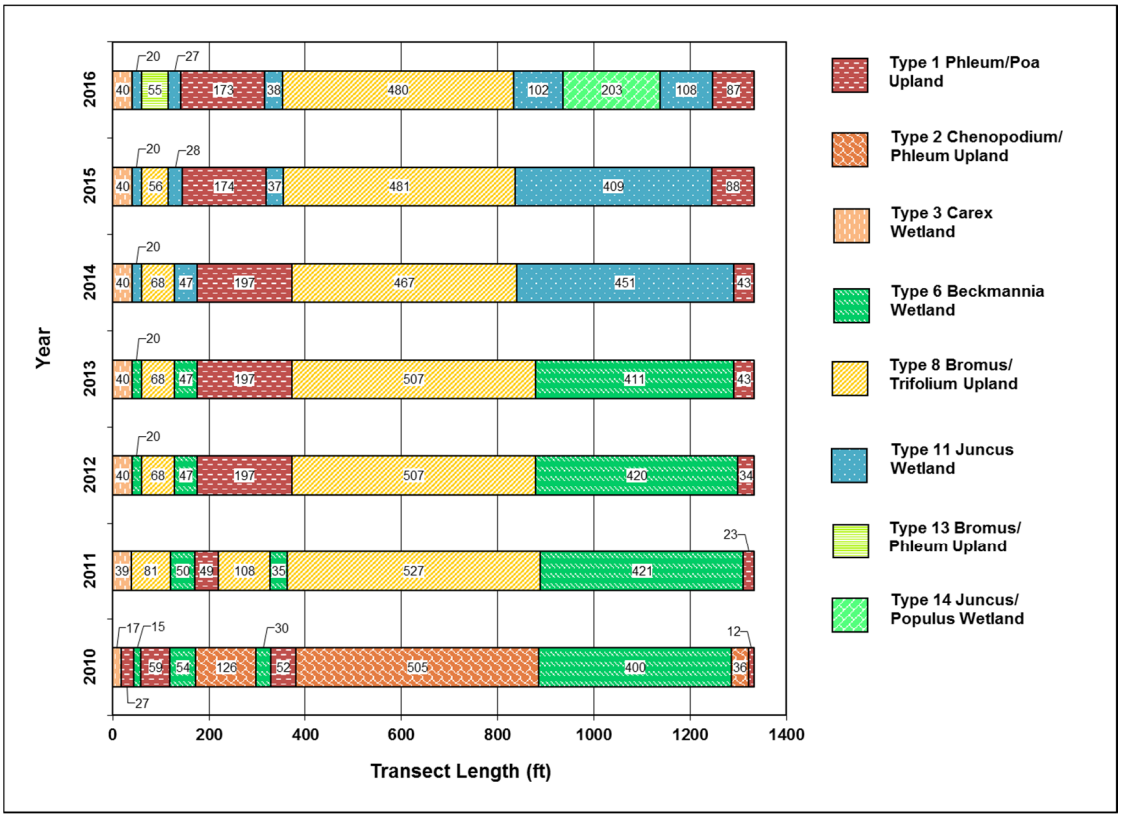


Chart 3-3. Transect Maps Showing Community Types on T-2 From 2010 Through 2016 From Start/North (0 Foot) to Finish/South (1,333 Feet) at the Easton Ranch Site.

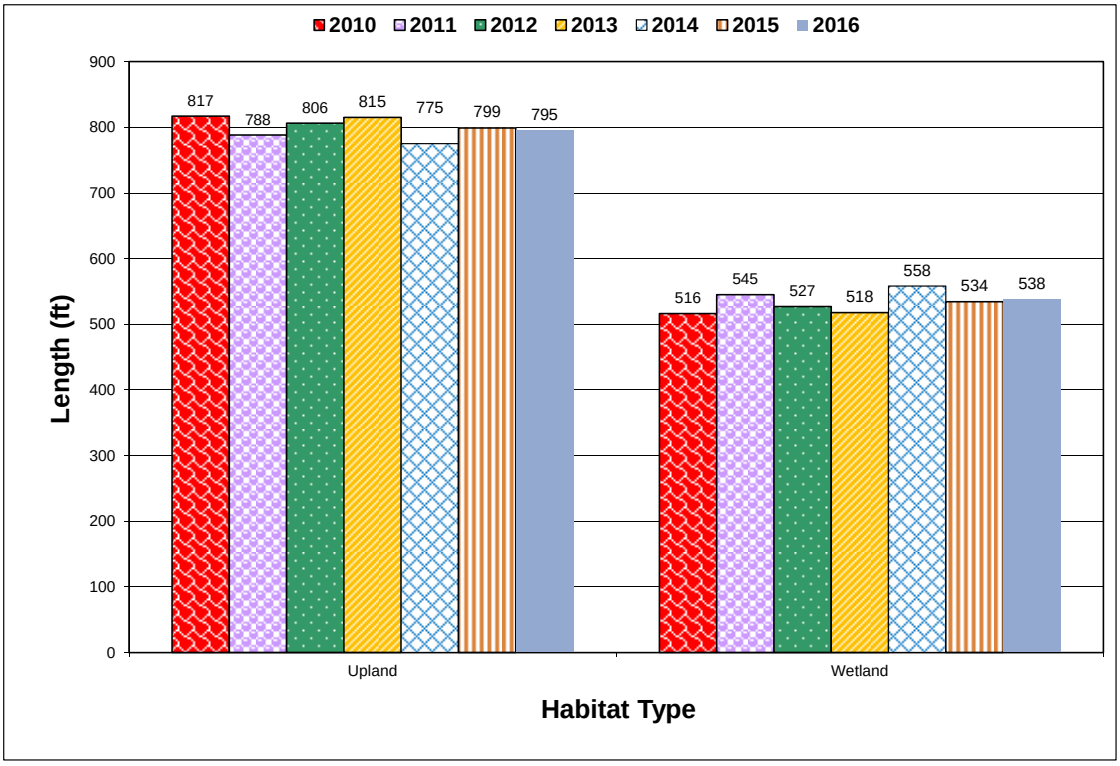


Chart 3-4. Length of Habitat Types Within T-2 From 2010 Through 2016 at the Easton Ranch Site.

Table 3-4. Data Summary for T-3 From 2010 Through 2016 at the Easton Ranch Site

Monitoring Year	2010	2011	2012	2013	2014	2015	2016
Transect Length (feet)	**751**	**751**	**751**	**751**	**751**	**732**	**732**
Vegetation Community Transitions Along Transect	11	9	9	8	8	4	4
Vegetation Communities Along Transect	3	3	3	3	3	3	3
Hydrophytic Vegetation Communities Along Transect	1	1	1	1	1	1	1
Total Vegetative Species	24	35	33	34	39	39	45
Total Hydrophytic Species	11	17	20	20	24	23	28
Total Upland Species	13	18	13	14	15	16	17
Estimated % Total Vegetative Cover	65	70	80	85	85	85	85
Estimate % Unvegetated	35	30	20	15	15	15	15
% Transect Length Comprising Hydrophytic Vegetation Communities	45.0	50.0	49.1	48.9	48.9	43.3	44.4
% Transect Length Comprising Upland Vegetation Communities	55.0	50.0	50.9	51.1	51.1	56.7	55.5
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Transect Length Comprising Mudflat	0.0	0.0	0.0	0.0	0.0	0.0	0.0

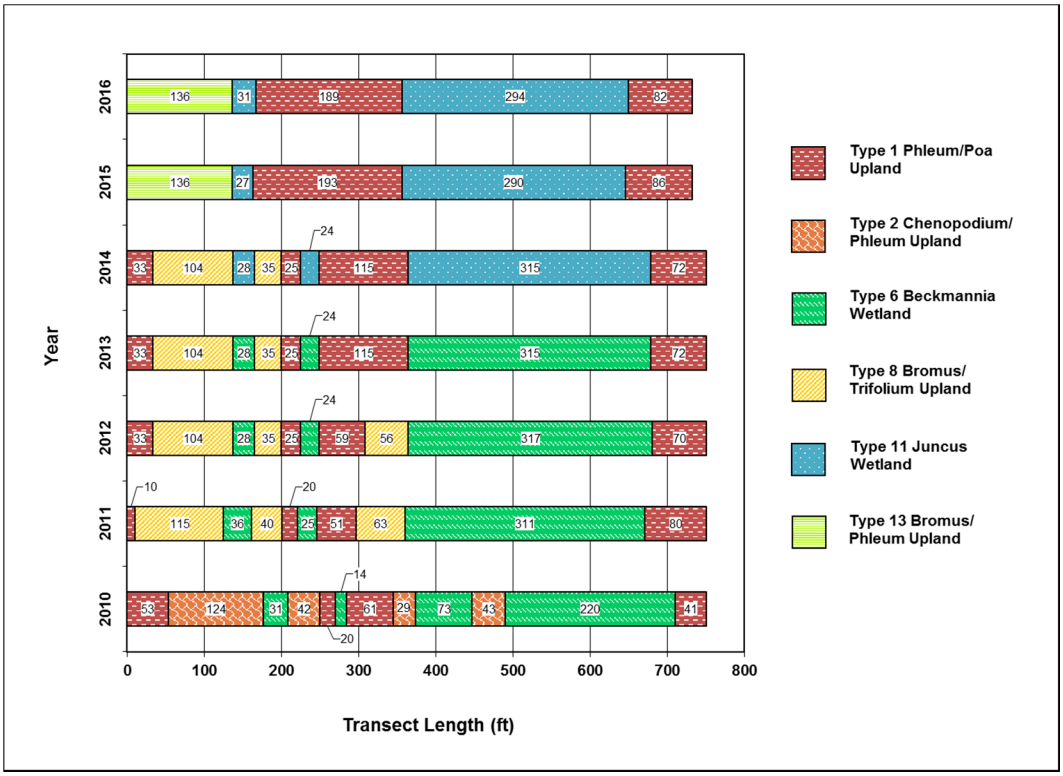


Chart 3-5. Transect Maps Showing Community Types on T-3 From 2010 Through 2016 From Start/West (0 Foot) to Finish/East (751 Feet in 2010 Through 2014 and 732 Feet in 2015 and 2016) at the Easton Ranch Site.

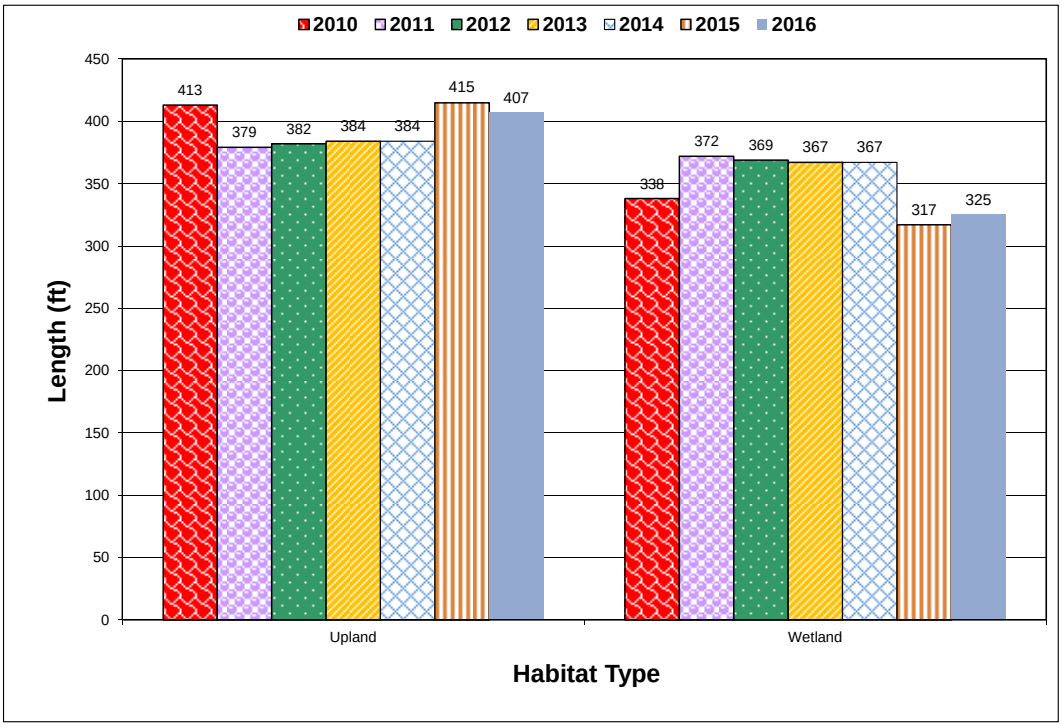


Chart 3-6. Length of Habitat Types Within T-3 From 2010 Through 2016 at the Easton Ranch Site.

During the June 2016 monitoring, 28 infestations of Canada thistle (*Cirsium arvense*), which is a Priority 2B noxious weed, were identified on site, primarily in uplands and along the site perimeter (Figure A-3, Appendix A). The infestations ranged in area from less than 0.1 acre to between 0.1 and 1.0 acre. The cover classes ranged from a trace (< 1 percent) to moderate (6–25 percent) cover. Canada thistle was observed in community Types 1 – *Phleum pratense/Poa pratensis*, 3 – *Carex* spp., 5 – *Populus balsamifera*, 13 – *Bromus* spp./*Phleum pratense*, 10 – *Bromus inermis/Populus tremuloides*, and 11 – *Juncus* spp./*Glyceria* spp. Twelve infestations of gypsy-flower (*Cynoglossum officinale*) were observed on site, primarily in uplands. The size of the infestations was less than 0.1 acre with a trace (< 1 percent) to 5 percent cover. Ongoing weed control/spraying appears to be reducing overall infestation size and density across the site. During a second site visit on August 13, 2016, the majority of the weed infestations along the site perimeter and access road that were noted during the June monitoring had been sprayed. MDT has an ongoing weed-control program, and contractors sprayed weeds on July 1, 2016.

Several hundred cuttings and containerized vegetative materials were planted along the constructed flood channel to increase channel stability. A thorough survey of the project area was conducted in 2016 to locate and identify surviving cuttings and containerized saplings. Approximately 12 red osier dogwood (*Cornus alba*), 35 sandbar willow, 43 thin-leaf alder, and 75 willow cuttings were identified as surviving in 2016. The amount of woody volunteer species increased, especially quaking aspen (*Populus tremuloides*) root suckers along the northern and southern project boundaries in 2016. Narrow-leaf willow, yellow willow, and narrow-leaf cottonwood (*Populus angustifolia*) root suckers were observed within the constructed cells. Balsam cottonwood (*Populus balsamifera*) root suckers (18–32 inches tall) were abundant in a portion of the constructed wetland Cell 3 near the Shields River. The majority of the woody volunteers noted within the constructed wetland cells are likely the result of seeds deposited in sediment from the 2011 flood across the site, especially in wetland Cells 1 and 3 near the Shields River.

3.3 SOIL

The project site was mapped in the *Web Soil Survey for Park County* [USDA, 2010] within the Meadowcreek and rarely flooded Nesda complexes, which was found on 0–2 percent slopes (155A). The Meadowcreek series is a somewhat poorly drained clay loam soil that is located on floodplains within valleys. The map unit is listed on the *Montana Hydric Soils List* [USDA, 2014] 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 soil series (DP-1W, DP-1U, DP-2W, and DP-2U; Figure A-2, Appendix A). DP-1W and DP-2W were located within wetland community Type 11 – *Juncus* spp./*Glyceria* spp. DP-1U and DP-2U were located within upland community Type 1 – *Phleum pratense/Poa pratensis*. Soil profile for DP-1W included a dark grayish-brown (10YR 4/2) sandy clay loam with 20 percent red (2.5YR 4/8) redox concentrations along the pore linings. This soil met the criteria for depleted below dark surface (A11), depleted matrix (F3), and classification as a hydric soil. The paired upland soil test pit DP-1U revealed a very dark gray (10YR 3/2) gravelly, loamy sand. The soil observed at this upland data point

had no hydric soil indicators. The profile at DP-2W revealed a very dark brown (10 YR 2/2) silt loam soil to a depth of 15 inches and cobbles below that. This soil did not meet exhibit any hydric soil indicators, possibly because it is within a constructed overflow flood channel and the indicators have not developed yet. However, the soils at DP-2W were saturated throughout as noted during the June 24, 2016, monitoring. The soil profile for DP-2U were a dark brown (10YR 3/3) sandy loam with a rock layer at 14 inches.

3.4 WETLAND DELINEATION

The four data points previously described were used to support the wetland boundary (Figure A-2, Appendix A; Wetland Determination Data forms, Appendix B). DP-1W and DP-2W were located within wetland community Type 11 – *Juncus spp./Glyceria spp*., with data points DP-1U and DP-2U in upland community Type 1 – *Phleum pratense/Poa pratensis* and 13 – *Bromus spp./Phleum pratensis*, respectively. The total wetland acreage, including preexisting wetland, was 12.01 acres in 2016, which was a decrease of 0.60 acre since 2014, as shown in Table 3-5. Water from the irrigation system at the northeast boundary had been diverted to the site during the spring and summer of 2016. The frequency and duration of surface and ground water appears to support a dominance of hydrophytic vegetation in most of the excavated and preexisting wetland areas. Several wetlands within the project area have decreased in size over the years because of changes in hydrology. The delineation mapped 1.1 acres of preexisting emergent and shrub/scrub wetland within the mitigation boundaries in 2016 (Figure A-3, Appendix A). The preexisting wetlands were originally defined during the baseline investigation completed in August 2001 [MDT, 2008]. The 2016 delineated wetland acres include 1.56 acres of the reestablished flood channel (Type 11; Figure A-3, Appendix A) and 9.34 acres of created wetland. Uplands account for 20.64 acres of the mitigation site. The vegetation cover in the depressions characterized by wetland community Type 11 remains the same except for an increase in the cover of woody species within constructed wetland Cell 3.

Table 3-5. Total Wetland Acres Delineated From 2010 Through 2016 at the Easton Ranch Site

Habitat	2010 (acres)	2011 (acres)	2012 (acres)	2013 (acres)	2014 (acres)	2015 (acres)	2016 (acres)
Preexisting Wetland Area	1.10	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	10.91	10.91
Total Wetland Habitat	**11.53**	**11.64**	**11.64**	**12.40**	**12.64**	**12.01**	**12.01**

3.5 WILDLIFE

A comprehensive list of bird and other wildlife species observed directly or indirectly from 2010 through 2016 is presented in Table 3-6. Fourteen bird species were identified in 2016. The behaviors and habitats of all of the birds observed in 2016 are listed on the Wetland Mitigation Site Monitoring form (Appendix B). Three white-tailed deer (*Odocoileus virginianus*), one striped skunk, and northern pocket gopher (*Thomomys talpoides*) burrows were observed on site in 2016. Because an active bald eagle (*Haliaeetus leucocephalus*) nest is located directly southwest of the site on the west side of the Shields River, the project site is within the primary habitat zone for bald eagles. Juvenile bald eagles were heard but were not observed on the project site during the 2016 site visit.

Table 3-6. Wildlife Species Observed From 2010 Through 2016 at the Easton Ranch Site (Page 1 of 2)

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*
Mountain Cottontail	*Sylvilagus nuttallii*
Northern Pocket Gopher	***Thomomys talpoides***
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 Garter Snake	*Thamnophis radix*
Bird	
American Coot	*Fulica americana*
American Crow	***Corvus brachyrhynchos***
American Goldfinch	*Spinus tristus*
American Kestrel	*Falco sparverius*
American Robin	***Turdus migratorius***
American White Pelican	*Pelecanus erythrorhynchos*
American Wigeon	*Anas americana*
Bald Eagle	*Haliaeetus leucocephalus*
Band-tailed Pigeon	*Patagioenas fasciata*
Bank Swallow	*Riparia riparia*
Barn Swallow	*Hirundo rustica*
Belted Kingfisher	*Megaceryle alcyon*
Black-billed Magpie	*Pica hudsonia*
Black-capped Chickadee	*Poecile atricapillus*
Brown-headed Cowbird	***Molothrus ater***
Bullock's Oriole	*Icterus bullockii*
Canada Goose	*Branta canadensis*
Cedar Waxwing	*Bombycilla cedrorum*

Table 3-6. Wildlife Species Observed From 2010 Through 2016 at the Easton Ranch Site (Page 2 of 2)

Common Name	Scientific Name
Bird	
Common Grackle	***Quiscalus quiscula***
Common Nighthawk	*Chordeiles minor*
Eastern Kingbird	*Tyrannus tyrannus*
Golden Eagle	*Aquila chrysaetos*
Gray Catbird	*Dumetella carolinensis*
Gray Partridge	*Perdix perdix*
Great Blue Heron	***Ardea herodias***
Great Horned Owl	*Bubo virginianus*
House Wren	*Troglodytes aedon*
Killdeer	***Charadrius vociferus***
Lesser Yellowlegs	*Tringa flavipes*
Mallard	*Anas platyrhynchos*
Marsh Wren	*Cistothorus palustris*
Mountain Bluebird	***Sialia currucoides***
Mourning Dove	***Zenaida macroura***
Northern Flicker	*Colaptes auratus*
Northern Harrier	*Circus cyaneus*
Osprey	*Pandion haliaetus*
Pacific Wren	*Troglodytes pacificus*
Red-tailed Hawk	***Buteo jamaicensis***
Red-winged Blackbird	***Agelaius phoeniceus***
Sandhill Crane	***Grus canadensis***
Savannah Sparrow	*Passerculus sandwichensis*
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*
Wild Turkey	***Meleagris gallopavo***
Willet	*Tringa semipalmata*
Wilson's Snipe	*Gallinago delicata*
Yellow Warbler	***Dendroica petechia***
Yellow-rumped Warbler	*Dendroica coronata*

Species that were identified in 2016 are **bolded.**

3.6 FUNCTIONAL ASSESSMENT

The 2008 MDT MWAM [Berglund and McEldowney, 2008] has been used to evaluate three AAs (Appendix B). The AAs were separated by Creation, Restoration, and Preservation areas of the mitigation site and are discussed below. Tables 3-7, 3-8, and 3-9 display the functions and values of the Creation, Restoration, and Preservation areas, respectively.

Table 3-7. Functions and Values of the Easton Ranch Site From 2010 Through 2016 for the Creation Area

Function and Value Parameters From the 2008 MDT Montana Wetland Assessment Method	2010 Creation	2011 Creation	2012 Creation	2013 Creation	2014 Creation	2015 Creation	2016 Creation
Listed/Proposed Threatened and Endangered (T&E) Species Habitat	Low (0.0)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.0)	Low (0.0)	Low (0.0)
Montana Natural Heritage Program (MTNHP) Species Habitat	Mod (0.6)	Mod (0.6)	Low (0.2)	Low (0.2)	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)	Mod (0.7)	High (0.9)
General Fish/Aquatic Habitat	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flood Attenuation	Mod (0.6)	Mod (0.5)	Mod (0.5)	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)	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)	High (0.9)	High (0.9)
Sediment/Shoreline Stabilization	Low (0.2)	Low (0.2)	Mod (0.6)	Mod (0.6)	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)	High (0.8)	High (0.8)
Groundwater Discharge/ Recharge	High (1.0)	High (1.0)	Mod (0.7)	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)	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)	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**	**5.65/10**	**5.85/10**
% of Possible Score Achieved	**52.5**	**57.5**	**57.5**	**57.5**	**56.5**	**56.5**	**58.5**
Overall Category	**III**	**III**	**III**	**III**	**III**	**III**	**III**
Acreage of Assessed Aquatic Habitats Within Easement	**8.98**	**9.09**	**9.09**	**9.74**	**9.98**	**9.34**	**9.34**
Functional Units (acreage × actual points)	**47.15**	**52.27**	**52.27**	**56.01**	**56.39**	**52.77**	**54.64**

The Creation AA encompassed 9.34 acres of constructed palustrine, emergent, and scrub/shrub wetland cells that generate 54.64 functional units, which is a slight increase from 2015 (52.77 function units) to account for the scrub/shrub community development. The overall rating for the Creation AA remained at a Category III wetland characterized by low disturbance in 2016. The ratings were high for general wildlife habitat, 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 Type 13 – *Bromus* spp./*Phleum pratense*) transition to wetland habitat, provided sufficient wetland hydrology exists within the site. In 2016, the site's wetland acreage was the same as the wetland acreage mapped in 2015. The release

of irrigation water during the spring and summer sustained wetland acreage with improvements in woody vegetation cover and growth across portions of the site, but more than one growing season will likely be needed for wetland acreage to expand. Additionally, lower stream flows and precipitation levels in 2016 also likely contributed to the lack of wetland acreage expansion, especially across the western portion of the site.

Table 3-8. Functions and Values of the Easton Ranch Site From 2010 Through 2016 for the Restoration Area

Function and Value Parameters From the 2008 MDT Montana Wetland Assessment Method	2010 Restoration	2011 Restoration	2012 Restoration	2013 Restoration	2014 Restoration	2015 Restoration	2016 Restoration
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Mod (0.6)	Mod (0.6)	Low (0.2)	Low (0.2)	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)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flood Attenuation	Mod (0.5)	Mod (0.6)	Mod (0.6)	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)	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)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Mod (0.6)	Mod (0.6)	Mod (0.6)	High (0.9)	High (0.9)	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)	Mod (0.7)	Mod (0.7)
Groundwater Discharge/Recharge	High (1.0)	Mod (0.7)	Mod (0.7)	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)	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)	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**	**5.85/10**	**5.85/10**
% of Possible Score Achieved	**49.5**	**59.5**	**56.5**	**59.5**	**58.5**	**58.5**	**58.5**
Overall Category	**III**	**III**	**III**	**III**	**III**	**III**	**III**
Acreage of Assessed Aquatic Habitats Within Easement	**1.45**	**1.45**	**1.45**	**1.56**	**1.56**	**1.56**	**1.56**
Functional Units (acreage × actual points)	**7.18**	**8.63**	**8.19**	**9.28**	**9.13**	**9.13**	**9.13**

The Restoration AA consisted of 1.56 acres of reestablished flood channel. The Restoration AA (flood channel) received a Category III rating with 58.5 percent of the total possible points, which 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 9.13 functional units in 2016.

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 II 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 reevaluated in

2014 as supporting a seasonal/intermittent water regime, which was 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 2016.

Table 3-9. Functions and Values of the Easton Ranch Site From 2010 Through 2016 for the Preservation Area

Function and Value Parameters From the 2008 MDT Montana Wetland Assessment Method	2010 Preservation	2011 Preservation	2012 Preservation	2013 Preservation	2014 Preservation	2015 Preservation	2016 Preservation
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Mod (0.6)	Mod (0.6)	Low (0.2)	Low (0.2)	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)	High (0.9)	High (0.9)
General Fish/Aquatic Habitat	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flood Attenuation	Exc (1.0)	High (0.9)	Mod (0.6)	High (0.9)	High (0.9)	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)	Mod (0.6)	Mod (0.6)
Sediment/Nutrient/ Toxicant Removal	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Production Export/Food Chain Support	Mod (0.7)	Exc (1.0)	Exc (1.0)	Exc (1.0)	High (0.9)	High (0.9)	High (0.9)
Groundwater Discharge/ Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Uniqueness	Mod (0.6)	Mod (0.6)	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)	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**	**5.85/9**	**5.85/9**
% of Possible Score Achieved	**73.9**	**77.2**	**69.4**	**72.8**	**65.0**	**65.0**	**65.0**
Overall Category	**II**	**II**	**II**	**II**	**III**	**II**	**II**
Acreage of Assessed Aquatic Habitats Within Easement	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**
Functional Units (acreage × actual points)	**7.32**	**7.65**	**6.88**	**7.21**	**6.44**	**6.44**	**6.44**

3.7 PHOTOGRAPHIC DOCUMENTATION

Photographs taken from seven photo points (PP1 to PP7), of the transect end points, and of the four data points are provided in Appendix C. PP4A and PP4B show the Shields River just outside the northwestern corner of the project area.

3.8 MAINTENANCE NEEDS

Irrigation water was diverted onto the site twice during the spring and summer growing season. Water should continue to be diverted into the site during the early growing season in 2017 to promote

increased development of hydric soils and hydrophytic vegetation expansion within the site. Nine bird boxes were installed at the site between 2010 and 2016. Two of the bird boxes were occupied. All of the fences were intact. No maintenance was required for the man-made structures.

The site supports two state-listed noxious weeds (Canada thistle and gypsy-flower) primarily within the uplands and along the site perimeter (Figure A-3, Appendix A). The infestations of Canada thistle ranged in size from less than 0.1 acre to between 0.1 and 1.0 acre. The cover classes ranged from a trace (< 1 percent) to moderate (6–25 percent) cover. Canada thistle was observed in community Types 1 – *Phleum pratense/Poa pratensis*, 3 – *Carex* spp., 5 – *Populus balsamifera*, 13 – *Bromus* spp./*Phleum pratense*, 10 – *Bromus inermis/Populus termuloides*, and 11 – *Juncus* spp./*Glyceria* spp. The size of the gypsy-flower infestations was less than 0.1 acre with a trace (< 1.0 percent) to low (1–5 percent) cover. MDT has an ongoing weed-control program, and contractors sprayed the site in July/August 2016.

The east bank of the Shields River along the northwestern corner of the Easton Ranch mitigation site remained relatively stable from project completion through the 2011 runoff event. The structural integrity of the coir-wrapped soil lifts was intact after high flows. Fine-grain deposits accumulated on the lifts as floodwaters receded. The 2011 flood flows caused a wider base-flow channel to form because of a slight westward shift of the western bank, away from the site.

In early 2012, a woody debris jam was removed from the outer bend of the Shield River channel (east bank) downstream from PP4A, and several downed trees were removed from the cottonwood forest in the adjacent riparian zone. Removing these stabilizing elements increased the vulnerability of the river to lateral migration. During the next high-flow event (spring 2013), significant bank erosion occurred immediately upstream of PP4B. This erosion exposed the riprap that protects the reconstructed streambank, undermined the riprap along an approximately 85-foot-long section on that bank, and undermined the coir-wrapped soil lifts on that section, which caused significant loss of soil and willow cuttings. Photographs from PP4A and PP4B document these changes.

Some reaccumulation of woody debris in the former log jam location was noted in 2014, but 2016 showed little additional accumulation. Stacked piles of wood debris were noted in the floodplain to be burned or hauled away. Although additional bank erosion has been noted since the dramatic lateral cutting event of 2013, this section of bank remains exposed and vulnerable. The 2016 runoff period was fed by below-average precipitation. If some measures are not taken to provide additional stability to the outer bends of the Shields River through this reach, a future high-water event may result in significant additional movement of the bank, which already threatens to capture the northwest fence corner of the project area.

3.9 CURRENT CREDIT SUMMARY

Table 3-10 summarizes the current estimated wetland credits based on the USACE-approved credit ratios [MDT, 2008] and the wetland delineation completed in June 2016. Proposed mitigation included creating 24.95 acres of emergent and shrub/scrub wetlands, reestablishing a 1.56-acre

Table 3-10. Credit Summary From 2010 Through 2016 for the Easton Ranch Site

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 Credit Estimated (Acres)	2012 Wetland Acreages	2012 Credit Estimated (Acres)	2013 Wetland Acreages	2013 Credit Estimated (Acres)	2014 Wetland Acreages	2014 Credit Estimated (Acres)	2015 Wetland Acreages	2015 Estimated Credit (Acres)	2016 Wetland Acreages	2016 Credit Estimated (Acres)
Creation of palustrine emergent wetland via shallow excavation	Creation	1:1	24.95	24.95	7.78	7.78	9.09	9.09	9.09	9.09	9.74	9.74	9.98	9.98	9.34	9.34	9.34	9.34
Reestablishment of relic flood channel	Restoration (Reestablishment)	1:1	1.56	1.56	1.45	1.45	1.45	1.45	1.45	1.45	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
Preservation of existing shrub/scrub and palustrine emergent wetland	Preservation	4:1	1.10	0.28	1.10	0.28	1.10	0.28	1.10	0.28	1.10	0.28	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[a]	1.29	6.43[a]	1.29	6.43[a]	1.29	6.43[a]	1.29	2.60[b]	0.52	11.5[b]	2.30	11.5	2.3
Project impacts			–0.67	–0.67	–0.67	–0.67	–0.67	–0.67	–0.67	–0.67	–0.67	–0.67	–0.67	–0.67	–0.67	–0.67	–0.67	–0.67
Total			**27.41**		**10.12**		**11.44**		**11.44**		**12.19**		**11.67**		**12.81**		**12.81**	

(a) The upland buffer was expected to decrease as wetland areas expand within the mitigation boundary. The values presented in this table before 2014 (6.43 acres) represented the expected extent of upland buffer after maximum wetland acreage has been achieved.
(b) A 50-foot buffer was calculated with GIS in 2015.

flood channel, preserving 1.10 acres of preexisting wetland, and maintaining 6.43 acres of upland buffer. Proposed wetland credits for the project site totaled 27.41 credit acres, which accounted for 0.67 acre of impacts associated with constructing the mitigation wetland.

The 2016 delineation identified a total of 12.01 acres of wetlands within the project boundary. Approximately 9.34 acres of emergent wetland has developed to date within the constructed cells. The restored channel encompassed 1.56 acres of riverine emergent wetland. The preexisting wetlands, which included portions of community Types 3 – *Carex* spp., 4 – *Salix drummondiana*, and 5 – *Populus balsamifera*, encompassed 1.1 acres. Uplands accounted for 20.64 acres of the 32.65-acre site. The current 50-foot upland buffer calculated for this site totals 11.5 acres. The expected value of 2.6 acres of upland buffer was replaced in 2015 with the GIS-calculated 50-foot upland buffer of 11.5 acres based on the existing extent of wetland development within the site. This resulted in a slight increase of credits between 2014 and 2015; although, the overall extent of wetland habitat has decreased. Applying the USACE-approved mitigation ratios to each mitigation feature, a total of 12.81 acres of credit were estimated in 2016 (Table 3-10), which is approximately 14.6 acres short of the proposed final credit acreage.

This 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, 2013, and 2015, which limited potential expansion of wetland acreage within the site. In 2016, the excavated depression soils were either saturated or inundated, which was likely caused by irrigation water release and/or groundwater levels during the spring and early summer. This additional water supported wetland hydrology, hydrophytic vegetation, and hydric soil development but did not appear to expand the wetland acreage as determined during the June 2016 monitoring. The 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, 2013, 2015, and 2016 field surveys were likely the result of a decrease in precipitation during those years. In 2012, 2013, 2015 and 2016, the precipitation was 18 percent, 11 percent, 8 percent, and 25 percent, respectively, which all fall below the January to August long-term average. In 2014, precipitation was 22 percent above the January to August long-term average. If water is not added to the site, the southern portion of the restored channel and the created wetland Cell 1 (located directly west of the channel) could revert to non-wetland status, which could result in a loss of approximately 0.5 acre (0.5 estimated credits) of created and restored wetland area. A more efficient water management plan for use of the supplemental irrigation water is being worked out with MDT and the current landowner/ranch manager to ensure delivery of water into the site during the early spring/summer to promote wetland development.

Table 3-11 summarizes the mitigation goals for the Easton Ranch site. The site has shown continued progress toward achieving goals; however, the targeted credit acreage has not been achieved in 2016 and 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 that were originally identified as a target for wetland creation. Expanding the current wetland acreage is likely with the continued release of irrigation water during the spring and summer to supplement hydrology in years with below-

average precipitation and snowpack to restore/maintain hydrology across the eastern portion of the site, but normal or above-average precipitation is also needed to aid in and restore wetland development across the remaining portion of the site.

Table 3-11. Summary of Success Criteria and Site Performance

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 9.34 acres of wetland habitat have been created at this site to date. The beginnings of a dominance of hydrophytic trees and shrubs within created wetlands can be seen.
Reestablish a previously existing, relic floodplain channel and associated riparian and floodplain wetland areas that totals 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 that result in scour holes, riffles, and point bars. The fabric was exposed in minor areas, but bank erosion along this channel is minor 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.

Five of the mitigation goals have been achieved at this site. The constructed floodplain channel was activated during the 2011 spring runoff and caused scour holes, riffles, and point bars to develop 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 and store surface water during periods of high flow within the Shields River. These depressional wetlands have improved the water-storage capacity of the floodplain. Establishing hydrophytic vegetation communities; preserving existing scrub/shrub, forested, and emergent wetlands; and constructing wildlife-friendly fencing around the site have improved wildlife habitat within the Easton Ranch site.

The summary of performance standards listed in Table 3-12 indicates that this site has not achieved the full suite of success criteria established in the mitigation plan for the site. All of the wetlands that were delineated within this site in 2016 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

Table 3-12. Summary of Performance Standards and Success Criteria for the Easton Ranch Site (Page 1 of 2)

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Characteristics	The three parameter criteria for hydrology, vegetation, and soils are met as outlined in the 1987 Wetland Manual and the 2010 Regional Supplement.	Y	Areas that were identified as wetland habitat within the mitigation site meet the three parameter criteria.
Wetland Hydrology	Soil saturation is present for at least 12.5 percent of the growing season.	Y	Areas that were identified as wetland habitat within the mitigation site exhibit soil saturation for a minimum 12.5 percent of the growing season.
	Groundwater wells will be left undisturbed within the site to monitor groundwater elevations during the growing season.	N	No groundwater wells remain on site. Because of 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.
	The constructed stream channel is stable.	Y	The constructed floodplain channel is stable with minimal bank erosion identified throughout the mitigation area.
Hydric Soil	Hydric soil conditions are 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	Wetlands are delineated as hydrophytic by using technical guidelines.	Y	Areas that were 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.	Y	Trees and shrubs have been planted throughout the site and are assessed during each yearly monitoring visit.
	Scrub/shrub wetlands 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 shows signs of progression toward that goal at the end of the defined monitoring period.	Y	Approximately 13 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. The site appears to exhibit progress toward these success criteria.
Herbaceous Plants	At least 80 percent 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	27.41 net credit acres are provided for the project area.	N	A total of 12.81 acres of wetland credit has been generated for the site. This total includes 9.34 acres of created wetland, 1.56 acres of restored wetland, 1.10 acres of preserved wetland, establishment of a 11.5-acre upland buffer, and 0.67-acre debit from project impacts.
	Emergent wetland habitat will be 70–75 percent of mitigation wetland.	N	Emergent wetland habitat comprises approximately 86 percent of total wetland areas delineated in 2016.

Table 3-12. Summary of Performance Standards and Success Criteria for the Easton Ranch Site (Page 2 of 2)

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Acreage Development	Scrub/shrub wetland habitat will be 15–20 percent of wetland area.	N	Scrub/shrub wetland habitat comprises approximately 13 percent of total wetland areas delineated in 2016. The increase in woody plants is caused by the increased size/height and is more visible above the herbaceous vegetation.
	Open water will be less than 5 percent of wetland area.	Y	Aquatic macrophytes habitat composes approximately 1 percent of total wetland areas delineated in 2016, which is an 8.1 percent reduction compared to 2015 and was likely caused by lower stream flows and lower seasonal precipitation. These inundated areas (< 3 feet deep) seasonally fluctuate throughout the growing season and support diverse 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	Stability is achieved 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)	The area is visually inspected and photo-documented.	Y	The results of annual inspection and photographic documentation along the Shields River in the northwestern corner of the site are presented in the mitigation monitoring reports.
	Stability is 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 riprap installed along the bank are eroding near the northwest corner of the site. 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 that was disturbed within the creditable buffer zone must have at least 50 percent aerial cover of nonweed species by the end of the monitoring period.	Y	Disturbed areas have established greater than 50 percent cover by nonweed species.
Weed Control	Less than 5 percent absolute cover of state-listed noxious weed species exists across the site.	Y	State-listed noxious weed species across the site is less than 5 percent absolute cover.
Fencing	Wildlife-friendly fencing is installed along the easement boundaries.	Y	Wildlife-friendly fencing has been removed from the western and southern portions of the easement boundaries in an effort to promote wildlife movement across the wetland and the Shield River riparian corridor. The remaining fences are in good condition.
Monitoring	Monitor the site for a minimum period of 5 years or longer as determined by the USACE.	Y	Comprehensive site monitoring has been ongoing for approximately 6 years, since construction activities were completed in 2009.

had been removed during construction. Redoximorphic concentrations and other hydric characteristics have developed within the wetland soils across the site. Below-average precipitation in 2016 and the lack of water flow onto the site has decreased hydrology of the project area. Soils that were disturbed during construction have developed vegetation communities and are stable with no signs of active erosion. Areas that were identified as wetland habitat support a prevalence of hydrophytic vegetation. Trees and shrubs that were planted throughout the mitigation site continue to develop and natural recruitment of aspen, willows, and cottonwoods has been documented. Approximately 165 live, planted woody stems were observed in 2016. The woody plants are increasing in height and coverage, with a positive trend toward achieving scrub/shrub communities. The improvement in woody plant growth is likely attributed to releasing irrigation water and improved hydrology observed across portions of the site.

The anticipated 27.41 acres of credit development has not occurred to date; anticipated credits and 2016 calculated credits have been discussed above. To satisfy this performance standard, an additional 14.6 acres of wetland habitat would need to be created within the site. Additional hydrology should be provided to the site. Additional hydrology sources that are potentially available to this site include increased irrigation water timing and frequency. In general, the percentages of emergent and scrub/shrub wetland habitat types fall outside the identified success criteria, as described in Table 3-10 although in 2016 there is a trend toward increasing woody/shrub habitat within the site which could potentially reduce emergent coverage over time. The criterion for open water to occupy less than 5 percent of wetland area has been achieved.

The floodplain channel is considered stable and successfully restored. The floodplain channel was designed to inundate during a Q2 event and was not intended to flow annually. Because of the lack of water in the system, the southern portion of the channel is reverting back to non-wetland status. This area is expected to fluctuate between inundations. The bank stability of the Shields River in the northwestern corner of the site has been considered marginal because the established vegetation along the banks primarily consist of upland pasture grasses that lack deep-binding roots. The stream bank has significant erosion and the underlying riprap is now exposed at the downstream end of the bank, which caused an eddy pool to form. The willow cuttings installed along this reach did not establish. The disturbed upland buffer has developed greater than 50 percent cover by nonweed species, and noxious weed cover is less than 10 percent. The percent cover of bare ground has decreased notably across the site from 2010 through 2016. Scrub/shrub communities are beginning to develop within portions of the site. Absolute cover of state-listed noxious weed species across the site is less than 5 percent. Weed management by MDT is ongoing. The fencing around the site was intact and in good condition; grazing has been excluded from the mitigation area.

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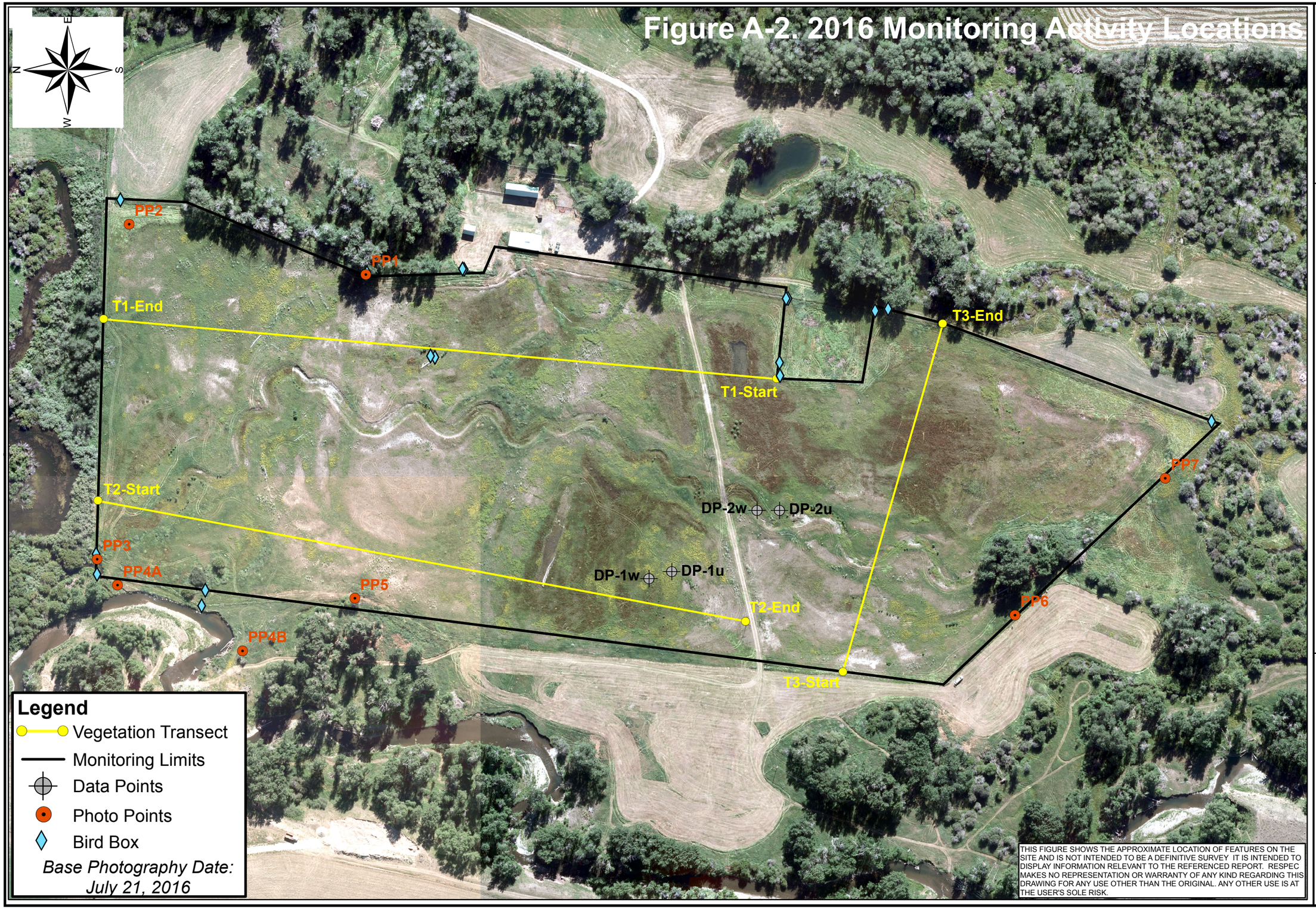
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APPENDIX A
PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

Figure A-2. 2016 Monitoring Activity Locations



THIS FIGURE SHOWS THE APPROXIMATE LOCATION OF FEATURES ON THE SITE AND IS NOT INTENDED TO BE A DEFINITIVE SURVEY IT IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. RESPEC 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.

RESPEC
820 North Montana Ave.,
Suite A
Helena, MT 59601

Easton Ranch Wetland Mitigation
2016 Monitoring Activity Locations

0 75 150 300 450 600 750 Feet

Project:	STPX-0034(14)
Location:	Park Co., Montana
Date:	October 2016
Project Manager:	M. Traxler
Drawn By:	J. Rosenbaum

File: Z:\RESPEC\02895 MDT Monitoring 2016\Easton Ranch\GPS Data\Mains\Monitor2016.mxd

Figure A-3. 2016 Mapped Site Features



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./Glyceria spp.*
12. *Eleocharis palustris/Typha latifolia*
13. *Bromus spp./Phleum pratense*
14. *Juncus spp./Populus balsamifera*

Legend

Monitoring Limits
Wetland Limits
Vegetation Communities

Base Photography Date: July 21, 2016

Acreages

Project Area	32.65 acres
Gross Wetland	12.01 acres
Pre-existing Wetland	1.10 acres
Net Wetlands	10.91 acres
Uplands	20.64 acres

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820 North Montana Ave., Suite A
Helena, MT 59601

Easton Ranch Wetland Mitigation
2016 Mapped Site Features

0 75 150 300 450 600 750 Feet

Project: STPX-0034(14)
Location: Park Co., Montana
Date: September 2016
Project Manager: M. Traxler
Drawn By: J. Rosenbaum

File: Z:\RESPEC\02895 MDT Monitoring 2016\Easton Ranch\GPS Data\Mains\Veg2016.mxd

APPENDIX B
MONITORING FORMS

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

RESPEC/MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: **Easton Ranch** Project Number: _____
Assessment Date: **June 24, 2016** Person(s) conducting the assessment: **C. Hoschouer, C. Seibert**
Location: **Northeast of Wilsall** MDT District: **Butte** Milepost: **NA**
Legal Description: T **4N** R **9E** Section **32 NW 1/4** **0**
Weather Conditions: **Cloudy, calm 75F** Time of Day: **7 AM**
Initial Evaluation Date: **August 25, 2010** Monitoring Year: **7** # Visits in Year: **2**
Size of evaluation area: **32.65 acres** Land use surrounding wetland: **Agriculture, riparian corridor**

HYDROLOGY

Surface Water Source: **High groundwater, periodic overbank flow from the Shields River.**
Inundation: **Present** Average Depth: **0.1 feet** Range of Depths: **0 to 1.5ft**
Percent of assessment area under inundation: **15%**
Depth at emergent vegetation-open water boundary: **0.5 feet**
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.):
Sediment deposits, geomorphic position, FAC-neutral test, surface water, saturation, dry season water table, reduced iron present and oxidized rhizopheres along living roots.

Groundwater Monitoring Wells: **Absent**
Record depth of water below ground surface (in feet):

Well Number	Depth	Well Number	Depth	Well Number	Depth

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.

COMMENTS / PROBLEMS:
The majority of the wetland cells were saturated or inundated with shallow surface water during the June monitoring. The ditch has become overgrown with shrubs.

Food plots have been established adjacent/outside to the mitigation site near northeastern and southeastern corners, which will likely attract and provide a food source for wildlife throughout the year.

VEGETATION COMMUNITIES

Community Number: **1** Community Title (main spp): **Phleum pratense/Poa pratensis**

Dominant Species	% Cover	Dominant Species	% Cover
Phleum pratense	4 = 21-50%	Taraxacum officinale	1 = 1-5%
Poa pratensis	4 = 21-50%	Populus tremuloides	1 = 1-5%
Bromus inermis	2 = 6-10%	Carex pachystachya	1 = 1-5%
Carum carvi	2 = 6-10%	Juncus tenuis	1 = 1-5%
Elymus repens	2 = 6-10%	Lotus corniculatus	1 = 1-5%
Dactylis glomerata	2 = 6-10%	Medicago lupulina	1 = 1-5%

Comments / Problems: ____

Community Number: **3** Community Title (main spp): **Carex spp.**

Dominant Species	% Cover	Dominant Species	% Cover
Carex utriculata	4 = 21-50%	Salix exigua	2 = 6-10%
Carex aquatilis	2 = 6-10%	Agrostis stolonifera	1 = 1-5%
Carex nebrascensis	2 = 6-10%	Stachys palustris	1 = 1-5%
Carex atherodes	1 = 1-5%	Juncus balticus	1 = 1-5%
Juncus effusus	2 = 6-10%	Poa palustris	1 = 1-5%
Scirpus microcarpus	2 = 6-10%	Mentha arvensis	1 = 1-5%

Comments / Problems: **This community type is diverse with a variety of species.**

Community Number: **4** Community Title (main spp): **Salix drummondiana**

Dominant Species	% Cover	Dominant Species	% Cover
Salix drummondiana	4 = 21-50%	Dactylis glomerata	2 = 6-10%
Carex nebrascensis	3 = 11-20%	Phleum pratense	2 = 6-10%
Pascopyrum smithii	3 = 11-20%	Ribes lacustre	2 = 6-10%
Beckmannia syzigachne	2 = 6-10%	Scirpus microcarpus	2 = 6-10%
Glyceria grandis	2 = 6-10%	Salix bebbiana	1 = 1-5%
Urtica dioica	2 = 6-10%	Mentha arvensis	1 = 1-5%

Comments / Problems: **Scrub-shrub community along the banks of the Shield River.**

Community Number: **5** Community Title (main spp): **Populus balsamifera**

Dominant Species	% Cover	Dominant Species	% Cover
Populus balsamifera	4 = 21-50%	Cirsium arvense	2 = 6-10%
Populus angustifolia	4 = 21-50%	Salix bebbiana	2 = 6-10%
Bromus inermis	2 = 6-10%	Scirpus microcarpus	2 = 6-10%
Glyceria striata	2 = 6-10%		
Salix lasiandra	2 = 6-10%		
Scutellaria lateriflora	2 = 6-10%		

Comments / Problems: **Small forested area along the southern project boundary.**

VEGETATION COMMUNITIES (continued)

Community Number: **7** Community Title (main spp): **Aquatic macrophytes**

Dominant Species	% Cover	Dominant Species	% Cover
Open water	5 = > 50%	Myriophyllum sp.	1 = 1-5%
Carex pachystachya	2 = 6-10%	Juncus balticus	+ = < 1%
Typha latifolia, Algae, green	2 = 6-10%	Eleocharis palustris	+ = < 1%
Glyceria grandis	2 = 6-10%	Ruppa maritima	+ = < 1%
Beckmannia syzigachne	2 = 6-10%	Juncus ensifolius	+ = < 1%
Carex utriculata	2 = 6-10%	Alisma gramineum	+ = < 1%

Comments / Problems: **In 2016, one area previouly identifed as CT7 has evolved into a community type 12 with a dominance of Eleocharis palustris and Typha latifolia.**

Community Number: **8** Community Title (main spp): **Bromus spp./Trifolium spp.**

Dominant Species	% Cover	Dominant Species	% Cover
Bromus inermis	3 = 11-20%	Taraxacum officinale	1 = 1-5%
Trifolium pratense	4 = 21-50%	Medicago lupulina	1 = 1-5%
Trifolium hybridum	2 = 6-10%	Lotus corniculatus	1 = 1-5%
Poa pratensis	2 = 6-10%	Potentilla gracilis	1 = 1-5%
Carum carvi	2 = 6-10%		
Phalaris arundinacea	1 = 1-5%		

Comments / Problems: **Small community type dominated by Bromus inermis and Trifolium.**

Community Number: **10** Community Title (main spp): **Bromus inermis/Populus tremuloides**

Dominant Species	% Cover	Dominant Species	% Cover
Bromus inermis	4 = 21-50%	Poa pratensis	1 = 1-5%
Populus tremuloides	3 = 11-20%	Medicago lupulina	1 = 1-5%
Carum carvi	3 = 11-20%	Rumex salicifolius	1 = 1-5%
Phleum pratense	2 = 6-10%	Thlaspi arvense	1 = 1-5%
Elymus repens	2 = 6-10%	Schedonorus pratensis	1 = 1-5%
Trifolium pratense	2 = 6-10%	Cirsium arvense	1 = 1-5%

Comments / Problems: **Small community type along the northern project boundary.**

Community Number: **11** Community Title (main spp): **Juncus spp./Glyceria spp.**

Dominant Species	% Cover	Dominant Species	% Cover
Juncus balticus	3 = 11-20%	Poa palustris	1 = 1-5%
Juncus effusus	2 = 6-10%	Eleocharis palustris	1 = 1-5%
Juncus tenuis	1 = 1-5%	Equisetum arvense	1 = 1-5%
Glyceria striata	3 = 11-20%	Mentha arvense	1 = 1-5%
Glyceria grandis	1 = 1-5%	Typha latifolia	1 = 1-5%
Alopecurus arundinaceus	2 = 6-10%	Salix lutea	1 = 1-5%

Comments / Problems: **Diverse wetland community type, many more species recorded with a cover value of less than 1 percent.**

VEGETATION COMMUNITIES (continued)

Community Number: **12** Community Title (main spp): **Eleocharis palustris/Typha latifolia**

Dominant Species	% Cover	Dominant Species	% Cover
Eleocharis palustris	4 = 21-50%	Plantago major	1 = 1-5%
Typha latifolia	3 = 11-20%	Cirsium arvense	1 = 1-5%
Beckmannia syzigachne	2 = 6-10%	Glyceria elata	1 = 1-5%
Carex utriculata	2 = 6-10%	Rumex crispus	1 = 1-5%
Agrostis stolonifera	1 = 1-5%	Taraxacum officinale	1 = 1-5%
Mentha arvensis	1 = 1-5%	Phalaris arundinacea	1 = 1-5%

Comments / Problems: **This community type was found in areas where surface water previously persisted for longer periods through the summer.**

Community Number: **13** Community Title (main spp): **Bromus spp./Phleum pratense**

Dominant Species	% Cover	Dominant Species	% Cover
Bromus inermis	4 = 21-50%	Elymus cinereus	1 = 1-5%
Phleum pratense	4 = 21-50%	Carum carvi	1 = 1-5%
Poa pratensis	3 = 11-20%	Elymus repens	1 = 1-5%
Elymus repens	2 = 6-10%	Lotus corniculatus	1 = 1-5%
Juncus longistylis	1 = 1-5%	Medicago lupulina	1 = 1-5%
Scirpus microcarpus	1 = 1-5%	Carex pachystacha	+ = < 1%

Comments / Problems: _____

Community Number: **14** Community Title (main spp): **Juncus spp./Populus balsamifera**

Dominant Species	% Cover	Dominant Species	% Cover
Juncus balticus	4 = 21-50%	Mentha arvense	1 = 1-5%
Juncus effusus	2 = 6-10%	Potentilla anserina	1 = 1-5%
Populus balsamifera	4 = 21-50%	Agrostis stolonifera	1 = 1-5%
Populus angustifolia	2 = 6-10%	Carex nebrascensis	1 = 1-5%
Salix lutea	2 = 6-10%	Alnus incana	1 = 1-5%
Poa pratensis	2 = 6-10%	Salix exigua	1 = 1-5%

Comments / Problems: **New community type mapped in 2016 found mainly within portions of constructed wetland cell 3. Populus balsamifera root suckers (18 to 32 inches tall) were common across a portion of this cell, other woody species included Salix lutea, Salix exigua and Alnus incana.**

Community Number: ___ Community Title (main spp): _____

Dominant Species	% Cover	Dominant Species	% Cover

Comments / Problems: _____

Additional Activities Checklist:

☒ Record and map vegetative communities on aerial photograph.

PLANTED WOODY VEGETATION SURVIVAL

Plant Species	Number Originally Planted	Number Observed	Mortality Causes
Red-osier dogwood	250	12	
Sandbar willow	250	35	
Thinleaf alder	500	43	
Willow cuttings	200	75	

Comments / Problems: _____

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Easton Ranch** Date: **June 24, 2016** Examiner: **C. Hoschouer, C. Seibert**
Transect Number: **1** Approximate Transect Length: **1376 feet** Compass Direction from Start: **5˚** Note: _____

Transect Interval Length: **46 ft (station 0 to 46)**	
Vegetation Community Type: Bromus spp./Phleum pratense	
Plant Species	**Cover**
Bromus inermis	3 = 11-20%
Phleum pratense	2 = 6-10%
Elymus repens	2 = 6-10%
Agrostis stolonifera	2 = 6-10%
Carum carvi	2 = 6-10%
Carex nebrascensis	1 = 1-5%
Juncus balticus	1 = 1-5%
Deschampsia caespitosa	1 = 1-5%
Poa pratensis	1 = 1-5%
Trifolium hybridum	+ = < 1%
Carex pachystachya	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length: **19 ft (station 46 to 65)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	4 = 21-50%
Juncus effusus	3 = 11-20%
Juncus ensifolius	2 = 6-10%
Carum carvi	1 = 1-5%
Salix lutea	1 = 1-5%
Carex nebrascensis	1 = 1-5%
Trifolium hybridum	+ = < 1%
Mentha arvensis	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length: **36 ft (station 65 to 101)**	
Vegetation Community Type: Aquatic macrophytes	
Plant Species	**Cover**
Open water	5 = > 50%
Carex pachystachya	1 = 1-5%
Glyceria grandis	1 = 1-5%
Eleocharis palustris	1 = 1-5%
Juncus balticus	1 = 1-5%
Typha latifolia	1 = 1-5%
Mentha arvensis	1 = 1-5%
Algae, green	1 = 1-5%
Agrostis stolonifera	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length: **33 ft (station 101 to 134)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	5 = > 50%
Juncus longistylis	1 = 1-5%
Juncus tenuis	1 = 1-5%
Carex nebrascensis	2 = 6-10%
Salix lutea	1 = 1-5%
Cirsium vulgare	1 = 1-5%
Poa pratensis	1 = 1-5%
Eleocharis palustris	1 = 1-5%
Poa palustris	+ = < 1%
Mentha arvensis	+ = < 1%
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Easton Ranch** Date: **June 24, 2016** Examiner: **C. Hoschouer, C. Seibert**
Transect Number: **1** Approximate Transect Length: **1376 feet** Compass Direction from Start: **5˚** Note: _____

Transect Interval Length: **59 ft (station 134 to 193)**	
Vegetation Community Type: Phleum pratense/Poa pratensis	
Plant Species	**Cover**
Poa pratensis	4 = 21-50%
Phleum pratense	3 = 11-20%
Bromus inermis	3 = 11-20%
Elymus repens	3 = 11-20%
Carum carvi	2 = 6-10%
Cirsium arvense	2 = 6-10%
Cynoglossum officinale	1 = 1-5%
Stachys palustris	1 = 1-5%
Sisymbrium loeselii	1 = 1-5%
Thlaspi arvense	+ = < 1%
Melilotus officinalis	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length: **69 ft (station 193 to 262)**	
Vegetation Community Type: Juncus spp/.	
Plant Species	**Cover**
Juncus effusus	2 = 6-10%
Juncus balticus	2 = 6-10%
Juncus ensifolius	2 = 6-10%
Open water	3 = 11-20%
Alopecurus arundinaceus	3 = 11-20%
Eleocharis palustris	2 = 6-10%
Salix lutea	2 = 6-10%
Salix exigua	1 = 1-5%
Scirpus microcarpus	1 = 1-5%
Potentilla anserina	1 = 1-5%
Glyceria grandis, Typha latifolia, Trifolium pratense	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **209 ft (station 262 to 471)**	
Vegetation Community Type: Bromus spp./Phleum pratense	
Plant Species	**Cover**
Bromus inermis	3 = 11-20%
Phleum pratense	2 = 6-10%
Melilotus officinalis	4 = 21-50%
Elymus cinereus	2 = 6-10%
Elymus repens	2 = 6-10%
Poa pratensis	3 = 11-20%
Trifolium pratense	2 = 6-10%
Carum carvi	2 = 6-10%
Alopecurus arundinaceus	1 = 1-5%
Trifolium hybridum	1 = 1-5%
Cirsium arvense	1 = 1-5%
Medicago lupulina, Lotus corniculatus	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **41 ft (station 471 to 512)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	4 = 21-50%
Juncus tenuis	2 = 6-10%
Juncus effusus	1 = 1-5%
Poa pratense	3 = 11-20%
Mentha arvensis	1 = 1-5%
Trifolium pratense	1 = 1-5%
Stachys palustris	1 = 1-5%
Carum carvi	1 = 1-5%
Mentha arvensis	1 = 1-5%
Carex pachystachya	1 = 1-5%
Alopecurus arundinacea	1 = 1-5%
Agrostis stolonifera	1 = 1-5%
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Easton Ranch** Date: **June 24, 2016** Examiner: **C. Hoschouer, C. Seibert**
Transect Number: **1** Approximate Transect Length: **1376 feet** Compass Direction from Start: **5˚** Note: _____

Transect Interval Length: **54 ft (station 512 to 566)**	
Vegetation Community Type: Phleum pratense/Poa pratensis	
Plant Species	**Cover**
Poa pratensis	3 = 11-20%
Phleum pratense	2 = 6-10%
Alopecurus arundinaceus	4 = 21-50%
Bromus inermis	2 = 6-10%
Lotus corniculatus	2 = 6-10%
Elymus repens	2 = 6-10%
Rumex salicifolius	1 = 1-5%
Cirsium arvense	1 = 1-5%
Melilotus officinalis	1 = 1-5%
Sisymbrium loeselii	1 = 1-5%
Cynoglossum officinale	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length: **58 ft (station 566 to 624)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus tenuis	3 = 11-20%
Juncus effusus	1 = 1-5%
Juncus balticus	1 = 1-5%
Lotus corniculatus	3 = 11-20%
Trifolium hybridum	3 = 11-20%
Carum carvi	1 = 1-5%
Agrostis stolonifera	1 = 1-5%
Melilotus officinalis	1 = 1-5%
Potentilla gracilis	1 = 1-5%
Carex pachystachya	1 = 1-5%
Poa pratensis, Deschampsia caespitosa	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **42 ft (station 624 to 666)**	
Vegetation Community Type: Bromus spp./Trifolium spp.	
Plant Species	**Cover**
Bromus inermis	2 = 6-10%
Trifolium pratense	4 = 21-50%
Trifolium hybridum	3 = 11-20%
Phleum pratense	2 = 6-10%
Carum carvi	2 = 6-10%
Poa pratensis	2 = 6-10%
Potentilla gracilis	2 = 6-10%
Lotus corniculatus	1 = 1-5%
Rumex crispus	1 = 1-5%
Deschampsia caespitosa	1 = 1-5%
Phalaris arundinacea	1 = 1-5%
Elymus repens	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **56 ft (station 666 to 722)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	5 = > 50%
Trifolium pratense	3 = 11-20%
Agrostis stolonifera	1 = 1-5%
Carum carvi	1 = 1-5%
Carex bebbii	1 = 1-5%
Medicago lupulina	1 = 1-5%
Salix lutea	1 = 1-5%
Rumex salicifolius	1 = 1-5%
Poa pratensis	1 = 1-5%
Salix exigua	1 = 1-5%
Cirsium arvense	1 = 1-5%
Deschampsia caespitosa	1 = 1-5%
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Easton Ranch** Date: **June 24, 2016** Examiner: **C. Hoschouer, C. Seibert**
Transect Number: **1** Approximate Transect Length: **1376 feet** Compass Direction from Start: **5˚** Note: _____

Transect Interval Length: **542 ft (station 722 to 1264)**	
Vegetation Community Type: Bromus spp./Phleum pratense	
Plant Species	**Cover**
Bromus inermis	3 = 11-20%
Phleum pratense	3 = 11-20%
Trifolium pratense	3 = 11-20%
Carum carvi	2 = 6-10%
Schedonorus pratensis	2 = 6-10%
Poa pratensis	2 = 6-10%
Vicia americana	2 = 6-10%
Equisetum arvense	2 = 6-10%
Melilotus officinalis	2 = 6-10%
Lotus corniculatus	2 = 6-10%
Taraxacum officinale	2 = 6-10%
Total Vegetative Cover:	%

Transect Interval Length: **58 ft (station 1264 to 1322)**	
Vegetation Community Type: Phleum pratense/Poa pratensis	
Plant Species	**Cover**
Phleum pratense	2 = 6-10%
Poa pratensis	2 = 6-10%
Bromus inermis	2 = 6-10%
Elymus repens	4 = 21-50%
Trifolium pratense	2 = 6-10%
Carum carvi	2 = 6-10%
Taraxacum officinale	2 = 6-10%
Cirsium arvense	2 = 6-10%
Equistem arvense	+ = < 1%
Medicago lupulina	+ = < 1%
Elymus trachycaulus	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length: **54 ft (station 1322 to 1376)**	
Vegetation Community Type: Bromus inermis/Populus tremuloides	
Plant Species	**Cover**
Bromus inermis	4 = 21-50%
Populus tremuloides	3 = 11-20%
Carum carvi	3 = 11-20%
Trifolium pratense	2 = 6-10%
Elymus repens	2 = 6-10%
Phleum pratense	1 = 1-5%
Cirsium arvense	1 = 1-5%
Elymus cinereus	+ = < 1%
Poa pratensis	+ = < 1%
Taraxacum officinale	+ = < 1%
Alopecurus arundinaceus	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	**Cover**
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Easton Ranch** Date: **June 24, 2016** Examiner: **C. Hoschouer, C. Seibert**
Transect Number: **2** Approximate Transect Length: **1333 feet** Compass Direction from Start: **185˚** Note: _____

Transect Interval Length: **40 ft (station 0 to 40)**	
Vegetation Community Type: Carex spp.	
Plant Species	**Cover**
Carex nebrascensis	5 = > 50%
Carex atherodes	2 = 6-10%
Carex utriculata	1 = 1-5%
Juncus balticus	2 = 6-10%
Poa pratensis	2 = 6-10%
Scirpus microcarpus	2 = 6-10%
Stachys palustris	1 = 1-5%
Juncus effusus	1 = 1-5%
Poa palustris	1 = 1-5%
Agrostis stolonifera	+ = < 1%
Equisetum arvense	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length: **20 ft (station 40 to 60)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	2 = 6-10%
Juncus effusus	2 = 6-10%
Juncus ensifolius	1 = 1-5%
Carex bebbii	1 = 1-5%
Carex nebrascensis	1 = 1-5%
Glyceria grandis	2 = 6-10%
Typha latifolia	1 = 1-5%
Eleocharis palustris	1 = 1-5%
Equisetum arvense	1 = 1-5%
Epilobium ciliatum	+ = < 1%
Salix lutea	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length: **55 ft (station 60 to 115)**	
Vegetation Community Type: Bromus inermis/Phleum pratense	
Plant Species	**Cover**
Phleum pratense	4 = 21-50%
Bromus inermis	2 = 6-10%
Poa pratensis	2 = 6-10%
Melilotus officinalis	2 = 6-10%
Trifolium pratense	2 = 6-10%
Equisetum arvense	2 = 6-10%
Lotus corniculatus	1 = 1-5%
Scirpus microcarpus	1 = 1-5%
Cirsium arvense	1 = 1-5%
Taraxacum officinale	1 = 1-5%
Juncus balticus	1 = 1-5%
Dactylis glomerata	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **27 ft (station 115 to 142)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	3 = 11-20%
Juncus effusus	2 = 6-10%
Poa pratensis	4 = 21-50%
Agrostis stolonifera	2 = 6-10%
Salix lutea	2 = 6-10%
Potentilla anserina	1 = 1-5%
Scirpus microcarpus	1 = 1-5%
Ranunculus macounii	1 = 1-5%
Poa palustris	1 = 1-5%
Deschampsia caespitosa	1 = 1-5%
Equisetum arvense	1 = 1-5%
Stachys palustris	1 = 1-5%
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Easton Ranch** Date: **June 24, 2016** Examiner: **C. Hoschouer, C. Seibert**
Transect Number: **2** Approximate Transect Length: **1333 feet** Compass Direction from Start: **185˚** Note: _____

Transect Interval Length: **173 ft (station 142 to 315)**	
Vegetation Community Type: Phleum pratense/Poa pratensis	
Plant Species	**Cover**
Phleum pratense	3 = 11-20%
Poa pratensis	4 = 21-50%
Elymus repens	3 = 11-20%
Melilotus officinalis	3 = 11-20%
Equisetum arvense	2 = 6-10%
Trifolium pratense	2 = 6-10%
Taraxacum officinale	2 = 6-10%
Trifolium hybridum	1 = 1-5%
Salix lutea	1 = 1-5%
Elymus cinereus	1 = 1-5%
	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **38 ft (station 315 to 353)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	3 = 11-20%
Juncus effusus	1 = 1-5%
Juncus tenuis	1 = 1-5%
Poa pratensis	4 = 21-50%
Salix lutea	2 = 6-10%
Deschampsia caespitosa	1 = 1-5%
Stachys palustris	1 = 1-5%
Agrostis stolonifera	1 = 1-5%
Ranunculus macounii	1 = 1-5%
Poa palustris, Equisetum arvense	1 = 1-5%
Scirpus microcarpus, Medicago lupulina	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **480 ft (station 353 to 833)**	
Vegetation Community Type: Bromus spp./Phleum pratense	
Plant Species	**Cover**
Bromus inermis	3 = 11-20%
Phleum pratense	3 = 11-20%
Elymus repens	4 = 21-50%
Agrostis stolonifera	1 = 1-5%
Bromus carinatus	1 = 1-5%
Cirsium arvense	1 = 1-5%
Elymus cinereus	1 = 1-5%
Lepidium campestre	1 = 1-5%
Juncus effusus	1 = 1-5%
Medicago lupulina	1 = 1-5%
Carum carvi	1 = 1-5%
Schedonorus pratensis. Lotus corniculatus	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **102 ft (station 833 to 935)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	5 = > 50%
Juncus effusus	2 = 6-10%
Juncus tenuis	1 = 1-5%
Salix lutea	3 = 11-20%
Agrostis stolonifera	2 = 6-10%
Cirsium arvense	2 = 6-10%
Poa pratensis	2 = 6-10%
Salix exigua	1 = 1-5%
Equisetum arvense	1 = 1-5%
Solidago gigantea	1 = 1-5%
Alnus incana	1 = 1-5%
Carex bebbii, Mentha arvensis, Populus balsamifera	1 = 1-5%
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Easton Ranch** Date: **June 24, 2016** Examiner: **C. Hoschouer, C. Seibert**
Transect Number: **2** Approximate Transect Length: **1333 feet** Compass Direction from Start: **185˚** Note: _____

Transect Interval Length: **203 ft (station 935 to 1138)**	
Vegetation Community Type: Juncus spp./Populus balsamifera	
Plant Species	**Cover**
Juncus balticus	4 = 21-50%
Juncus effusus	1 = 1-5%
Juncus tenuis	1 = 1-5%
Populus balsamifera	3 = 11-20%
Salix lutea	2 = 6-10%
Agrostis stolonifera	2 = 6-10%
Poa pratensis	2 = 6-10%
Carex nebrascensis	1 = 1-5%
Carex praegracilis	1 = 1-5%
Cirsium arvense	1 = 1-5%
Salix exigua, Potentilla anserina, Cicuta douglasii	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **108 ft (station 1138 to 1246)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	5 = > 50%
Juncus effusus	2 = 6-10%
Populus balsamifera	3 = 11-20%
Salix lutea	3 = 11-20%
Poa pratensis	2 = 6-10%
Equisetum arvense	2 = 6-10%
Trifolium pratense	1 = 1-5%
Trifolium hybridum	1 = 1-5%
Typha latifolia	1 = 1-5%
Mentha arvensis	1 = 1-5%
Carex utriculata	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **87 ft (station 1246 to 1333)**	
Vegetation Community Type: Phleum pratense/Poa pratensis	
Plant Species	**Cover**
Phleum pratense	2 = 6-10%
Poa pratensis	3 = 11-20%
Bromus inermis	3 = 11-20%
Agrostis stolonifera	2 = 6-10%
Populus balsamifera	2 = 6-10%
Taraxacum officinale	2 = 6-10%
Elymus repens	2 = 6-10%
Lotus corniculatus	1 = 1-5%
Poa compressa	1 = 1-5%
Trifolium hybridum	1 = 1-5%
Achillea millefolium	1 = 1-5%
Trifolium pratense	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	**Cover**
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Easton Ranch** Date: **June 24, 2016** Examiner: **C. Hoschouer, C. Seibert**
Transect Number: **3** Approximate Transect Length: **732 feet** Compass Direction from Start: **95˚** Note: _____

Transect Interval Length: **136 ft (station 0 to 136)**	
Vegetation Community Type: Bromus spp./Phleum pratense	
Plant Species	**Cover**
Bromus inermis	4 = 21-50%
Phleum pratense	2 = 6-10%
Carum carvi	3 = 11-20%
Elymus repens	2 = 6-10%
Poa pratensis	2 = 6-10%
Melilotus officinalis	2 = 6-10%
Elymus repens	2 = 6-10%
Taraxacum officinale	2 = 6-10%
Elymus cinereus	1 = 1-5%
Cirsium arvense	1 = 1-5%
Bare ground	2 = 6-10%
Total Vegetative Cover:	%

Transect Interval Length: **31 ft (station 136 to 167)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	3 = 11-20%
Lotus corniculatus	3 = 11-20%
Poa pratensis	2 = 6-10%
Trifolium hybridum	2 = 6-10%
Agrostis stolonifera	1 = 1-5%
Equisetum arvense	1 = 1-5%
Trifolium pratense	1 = 1-5%
Deschampsia caespitosa	1 = 1-5%
Equisetum arvense	1 = 1-5%
Carum carvi	1 = 1-5%
Medicago lupulina, Taraxacum officinale	1 = 1-5%
Total Vegetative Cover:	%

Transect Interval Length: **189 ft (station 167 to 356)**	
Vegetation Community Type: Phleum pratense/Poa pratensis	
Plant Species	**Cover**
Phleum pratense	3 = 11-20%
Poa pratensis	3 = 11-20%
Taraxacum officinale	3 = 11-20%
Trifolium pratense	2 = 6-10%
Carum carvi	2 = 6-10%
Bromus inermis	2 = 6-10%
Lotus corniculatus	1 = 1-5%
Equisetum arvense	1 = 1-5%
Solidago gigantea	1 = 1-5%
Dactylis glomerata	1 = 1-5%
Schedonorus pratensis	1 = 1-5%
Bromus carinatus	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length: **294 ft (station 356 to 650)**	
Vegetation Community Type: Juncus spp./	
Plant Species	**Cover**
Juncus balticus	5 = > 50%
Juncus effusus	2 = 6-10%
Juncus tenuis	2 = 6-10%
Juncus ensifolius	1 = 1-5%
Poa pratensis	2 = 6-10%
Cirsium arvense	2 = 6-10%
Sinapis arvense	1 = 1-5%
Glyceria striata	1 = 1-5%
Salix lutea	1 = 1-5%
Stachys palustris	1 = 1-5%
Carex nebrascensis, Carex pachystachya	1 = 1-5%
Typha latifolia, Scirpus microcarpus, Mentha arvensis,	+ = < 1%
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: **Easton Ranch** Date: **June 24, 2016** Examiner: **C. Hoschouer, C. Seibert**
Transect Number: **3** Approximate Transect Length: **732 feet** Compass Direction from Start: **95˚** Note: _____

Transect Interval Length: **82 ft (station 650 to 732)**	
Vegetation Community Type: Phleum pratense/Poa pratensis	
Plant Species	**Cover**
Phleum pratense	3 = 11-20%
Poa pratensis	3 = 11-20%
Bromus inermis	2 = 6-10%
Taraxacum officinale	2 = 6-10%
Carum carvi	2 = 6-10%
Agrostis stolonifera	1 = 1-5%
Equisetum arvense	1 = 1-5%
Lotus corniculatus	1 = 1-5%
Trifolium pratense	1 = 1-5%
Melilotus officinalis	1 = 1-5%
Juncus balticus, Juncus effusus, Juncus tenuis	+ = < 1%
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	**Cover**
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	**Cover**
Total Vegetative Cover:	%

Transect Interval Length:	
Vegetation Community Type:	
Plant Species	**Cover**
Total Vegetative Cover:	%

MDT WETLAND MONITORING – VEGETATION TRANSECT

Cover Estimate		**Indicator Class**	**Source**
+ = < 1%	3 = 11-10%	+ = Obligate	P = Planted
1 = 1-5%	4 = 21-50%	- = Facultative/Wet	V = Volunteer
2 = 6-10%	5 = > 50%	0 = Facultative	

Percent of perimeter developing wetland vegetation (excluding dam/berm structures): **___%**

Establish transects perpendicular to the shoreline (or saturated perimeter). The transect should begin in the upland area. Permanently mark this location with a standard metal fencepost. Extend the imaginary transect line towards the center of the wetland, ending at the 3 foot depth (in open water), or at the point where water depths or saturation are maximized. Mark this location with another metal fencepost.

Estimate cover within a 10 foot wide "belt" along the transect length. At a minimum, establish a transect at the windward and leeward sides of the wetland. Remember that the purpose of this sampling is to monitor, not inventory, representative portions of the wetland site.

Comments: **During the transect monitoring, a comprehensive list of all species noted within the different community types were recorded (along with a cover estimate value). Species with a rating or 1 or greater were generally included on the previous transect forms, species with less than 1 percent were generally not listed on the previous transect forms.**

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.

Location	Photograph Frame #	Photograph Description & Lat/Long	Compass Reading (°)
PP1	1	East boundary 46.059727 /-100.637505	250
PP2	1	Northeast corner 46.061028 /-110.637207	200
PP3	1	Northeast corner 46.061188 /-100.639848	100
PP4	1A	Shields bank 46.060993 /-110.640121	170
PP4	1B	Sheild bank 46.060414 /-110.640396	20
PP5	1	West boundary 46.059883 /-110.640404	90
PP6	1	Southwest corner 46.056175 /-110.64048	0
PP7	1	Southeast corner 46.055286 /-110.639137	340
T-1 Start	1	View of CT 11 and 13 46.057281 /-110.638306	5
T-1 End	1	View of CT 10 and 13 46.060627 /-110.637779	185
T-2 Start	1	View of CT 13 46.060139 /-110.639229	185
T-2 End	1	View of CT 1 46.057594 /-110.640343	0
T-3 Start	1	View of CT 13 46.056984 /-110.640656	95
T-3 End	1	View of CT 1 and 11 46.056114 /-110.637924	265
DP-1U	1	46.057975 /-110.63992	
DP-1W	1	46.058099 /-110.63998	
DP-2U	1	46.057030 /-110.639420	
DP-2W	1	46.057509 /-110.639425	

Comments / Problems: _____

GPS SURVEYING

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

GPS Checklist:

- ☒ Upland/wetland boundary.
- ☒ 4-6 landmarks that are recognizable on the aerial photograph.
- ☒ Start and End points of vegetation transect(s).
- ☐ Photograph reference points.
- ☐ Groundwater monitoring well locations.
- ☒ Bird nest boxes.

Comments / Problems: _____

WETLAND DELINEATION

(attach COE delineation forms)

At each site conduct these checklist items:

- ☒ Delineate wetlands according to the 1987 Army COE manual and regional supplement.
- ☒ Delineate wetland – upland boundary onto aerial photograph.

Comments / Problems: _____

FUNCTIONAL ASSESSMENT

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

Comments / Problems: _____

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? **NA**
If yes, are the structures working properly and in good working order? **NA**
If no, describe the problems below.

Comments / Problems: _____

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**

Mammals and Herptiles

Mammal and Herptile Species	Number Observed	Indirect Indication of Use			
		Tracks	Scat	Burrows	Other
Striped Skunk	1	☐	☐	☐	
Whitetail Deer	3	☐	☐	☐	
Northern Pocket Gopher		☐	☐	☒	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

Additional Activities Checklist:
NA Macroinvertebrate Sampling (if required)

Comments / Problems: _____

BIRD SURVEY – FIELD DATA SHEET

Site: **Easton Ranch** Date: **6/24/16**
Survey Time: **7 AM** to **5 PM**

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
American Crow	2	F	WM				
Brown-headed Cowbird	1		FO				
Common Grackle	1		WM UP				
Great Blue Heron	1	F	US				
Mountain Bluebird	3	N	UP FO				
Mourning Dove	2		UP				
Red-winged Blackbird	2		SS WM				
Sandhill Crane	2	F	WM UP				
Tree Shallow	1		FO				
Wild Turkey	1		UP				
Yellow Warbler	1						
Red-tailed Hawk	1	FO					
American Robin	2	F	WM UP				
Red-tailed Hawk	1	FO					

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

HABITAT CODES
AB = Aquatic bed
FO = Forested
I = Island
MA = Marsh
MF = Mud Flat
OW = Open Water
SS = Scrub/Shrub
UP = Upland buffer
WM = Wet meadow
US = Unconsolidated shore

Weather: _____

Notes: **Bluebirds were using the nesting boxes.**

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

Project/Site: Easton **City/County:** Park **Sampling Date:** 24-Jun-16

Applicant/Owner: MDT **State:** MT **Sampling Point:** **DP-1U**

Investigator(s): Cindy Hoschouer **Section, Township, Range:** **S** 32 **T** 4N **R** 9E

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** concave **Slope:** 0.0 **%** / 0.0 **°**

Subregion (LRR): LRR E **Lat.:** 46.057975 **Long.:** -110.63992 **Datum:** SP NAD83

Soil Map Unit Name: Meadowcreek, rarely flooded-Nesda complex, 0 to 2% slopes **NWI classification:** Not Mapped

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

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

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Upland sample point. Formerly SP-1.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1. Populus balsamifera	1	☐ 11.1%	FAC
2. Salix lutea	8	☑ 88.9%	OBL
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	9	**= Total Cover**	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Agrostis stolonifera	10	☐ 10.9%	FAC
2. Rumex crispus	1	☐ 1.1%	FAC
3. Carum carvi	1	☐ 1.1%	FACU
4. Cirsium arvense	2	☐ 2.2%	FAC
5. Lotus corniculatus	20	☑ 21.7%	FAC
6. Melilotus officinalis	20	☑ 21.7%	FACU
7. Pascopyrum smithii	10	☐ 10.9%	FACU
8. Poa secunda	20	☑ 21.7%	FACU
9. Taraxacum officinale	8	☐ 8.7%	FACU
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	92	**= Total Cover**	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	8	**x 1 =**	8
FACW species	0	**x 2 =**	0
FAC species	34	**x 3 =**	102
FACU species	59	**x 4 =**	236
UPL species	0	**x 5 =**	0
Column Totals:	101	**(A)**	346 **(B)**

Prevalence Index = B/A = 3.426

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrologic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **5 - Wetland Non-Vascular Plants** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:
Sample plot lacks a dominance (>50%) of hydrophytic vegetation and a Prevalence Index less than or equal to 3.0.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-1U

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	3/2	100	7.5YR	4/6	1	C	PL	Clay Loam	
8-15	10YR	3/2	100						Coarse Loamy Sand	Gravel throughout profile

[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 Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in 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)
- ☐ 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 during site visit.

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 on 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 (minimum of two 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, monitor well, aerial photos, previous inspections), if available:

Remarks:

No primary or secondary hydrology indicators observed during site visit.

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

Project/Site: Easton **City/County:** Park **Sampling Date:** 24-Jun-16

Applicant/Owner: MDT **State:** MT **Sampling Point:** **DP-1W**

Investigator(s): Cindy Hoschouer **Section, Township, Range:** **S** 32 **T** 4N **R** 9E

Landform (hillslope, terrace, etc.): Floodplain **Local relief (concave, convex, none):** concave **Slope:** 0.0 **%** / 0.0 **°**

Subregion (LRR): LRR E **Lat.:** 46.058099 **Long.:** -110.63998 **Datum:** SP NAD83

Soil Map Unit Name: Meadowcreek, rarely flooded-Nesda complex, 0 to 2% slopes **NWI classification:** Not Mapped

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

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

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ◉ No ○

Remarks:

PEM Wetland sample point. Formerly SP-2.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1. Populus balsamifera	1	☐ 16.7%	FAC
2. Salix lutea	5	☑ 83.3%	OBL
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	6	= Total Cover	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Carum carvi	1	☐ 1.3%	FACU
2. Equisetum arvense	5	☐ 6.3%	FAC
3. Juncus balticus	50	☑ 63.3%	FACW
4. Stachys palustris	10	☐ 12.7%	OBL
5. Pascopyrum smithii	1	☐ 1.3%	FACU
6. Sisyrinchium idahoense	1	☐ 1.3%	FACW
7. Taraxacum officinale	1	☐ 1.3%	FACU
8. Poa pratensis	10	☐ 12.7%	FAC
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	79	= Total Cover	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 40

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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	51	x 2 =	102
FAC species	16	x 3 =	48
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	85 (A)		177 (B)

Prevalence Index = B/A = 2.082

Hydrophytic Vegetation Indicators:

- ☑ **1 - Rapid Test for Hydrologic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **5 - Wetland Non-Vascular Plants** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:

sample plot contains substantial standing dead (decadent) plant material from Juncus balticus.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-1W

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	3/2	100						Clay	
8-16	10YR	4/2	80	2.5YR	4/8	20	C	PL	Sandy Clay Loam	

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

Hydric Soil Indicators: (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 Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in 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)
- ☐ 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:

Dark colored peds scattered throughout (likely decayed plants or historic sediment deposition).

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 on 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 (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ○	No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Soils were saturated to the surface.

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

Project/Site: Easton **City/County:** Park **Sampling Date:** 24-Jun-16

Applicant/Owner: MDT **State:** MT **Sampling Point:** DP-2U

Investigator(s): Cindy Hoschouer **Section, Township, Range:** S 32 T 4N R 9E

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR): LRR E **Lat.:** 46.0575091 **Long.:** -110.639425 **Datum:** WGS84

Soil Map Unit Name: Meadowcreek, rarely flooded-Nes **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:

Upland sample point approximately 15' to 20' east of DP-2W. New data point established in 2016.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Agrostis stolonifera	5	☐ 5.6%	FAC
2. Bromus inermis	20	☑ 22.2%	UPL
3. Phleum pratense	10	☐ 11.1%	FAC
4. Elymus repens	20	☑ 22.2%	FAC
5. Poa pratensis	15	☑ 16.7%	FAC
6. Dactylis glomerata	15	☑ 16.7%	FACU
7. Taraxacum officinale	5	☐ 5.6%	FACU
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	90	= Total Cover	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 10

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	20	x 4 =	80
UPL species	20	x 5 =	100
Column Totals:	90 (A)		330 (B)

Prevalence Index = B/A = 3.667

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrologic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **5 - Wetland Non-Vascular Plants** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks:

Sample plot lacks a dominance (>50%) of hydrophytic vegetation and a Prevalence Index less than or equal to 3.0.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-2U

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
0-15	7.5YR	3/3	100						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 Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in 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)
- ☐ 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 present.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on 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 (minimum of two 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, monitor well, aerial photos, previous inspections), if available:

Remarks:

Soils were dry, no primary or secondary indicators present.

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

Project/Site: Easton **City/County:** Park **Sampling Date:** 24-Jun-16

Applicant/Owner: MDT **State:** MT **Sampling Point:** **DP-2W**

Investigator(s): Cindy Hoschouer **Section, Township, Range:** **S** 32 **T** 4N **R** 9E

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 0.0 **%** / 0.0 **°**

Subregion (LRR): LRR E **Lat.:** 46.0575091 **Long.:** -110.639425 **Datum:** WGS84

Soil Map Unit Name: Meadowcreek, rarely flooded-Nes **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:
Wetland sample point within the channel. Formerly SP-3.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5 Foot Radius)			
1. Agrostis stolonifera	10	☐ 9.5%	FAC
2. Carex nebrascensis	20	☑ 19.0%	OBL
3. Carex utriculata	20	☑ 19.0%	OBL
4. Bromus inermis	5	☐ 4.8%	UPL
5. Glyceria grandis	5	☐ 4.8%	OBL
6. Juncus balticus	15	☐ 14.3%	FACW
7. Poa pratensis	5	☐ 4.8%	FAC
8. Scirpus microcarpus	25	☑ 23.8%	OBL
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	105	**= Total Cover**	
Woody Vine Stratum (Plot size: 30 Foot Radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0

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: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	70	**x 1 =**	70
FACW species	15	**x 2 =**	30
FAC species	15	**x 3 =**	45
FACU species	0	**x 4 =**	0
UPL species	5	**x 5 =**	25
Column Totals:	105	**(A)**	170 **(B)**

Prevalence Index = B/A = 1.619

Hydrophytic Vegetation Indicators:

- ☑ **1 - Rapid Test for Hydrologic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **5 - Wetland Non-Vascular Plants** [1]
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks:
Sample Plot has a dominance (>50%) of hydrophytic vegetation and a prevalence index of less than 3.0.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: DP-2W

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
0-15	10YR	2/2	100						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 Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except in 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)
- ☑ 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:

Site had geomorphic position in relic channel and passed the FAC-neutral test.

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 on 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 (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ○	No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Primary indicators of hydrology during site visit included soil saturation to the surface.

MDT MONTANA WETLAND ASSESSMENT FORM (revised March 2008)

1. Project Name: Easton Ranch **2. MDT Project #:** STPX-0034(14) **3. Control #:** 4866

3. Evaluation Date: 6/24/2016 **4. Evaluator(s):** C. Hoschouer, C. Seibert **5. Wetland/Site #(s):** Creation

6. Wetland Location(s): Township 4 N, Range 9 E, Section 32; Township ___ N, Range ___ E, Section _____

Approximate Stationing or Roadposts: NA

Watershed: 13 - Upper Yellowstone **County:** _ Park _ _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

- ☐ **Wetland potentially affected by MDT project**
- ☐ **Mitigation wetlands; pre-construction**
- ☒ **Mitigation wetlands; post-construction**
- ☐ **Other** _____

8. Wetland Size (acre): _____ (visually estimated)
9.34 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 9.34 (measured, e.g. GPS)

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA (See manual for definitions.)

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Riverine	Emergent Wetland	Excavated	Seasonal / Intermittent	90
Depressional	Aquatic Bed	Excavated	Seasonal / Intermittent	3
Riverine	Scrub-Shrub Wetland	Excavated	Seasonal / Intermittent	7

Comments: _____

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin; see manual.)
common

12. GENERAL CONDITION OF AA

i. Disturbance: Use matrix below to select the appropriate response; see manual for Montana listed noxious weed and aquatic nuisance vegetation species 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	---
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%.	---	---	---
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%.	---	---	---

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. A house is being built west of the Shield River on an upland terrace. Two species of noxious weeds were present within the AA. 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, and other exotic vegetation 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 food plots) 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 one is forested) classes	high	NA	NA	NA
2 (or 1 if forested) classes	---	NA	NA	NA
1 class, but not a monoculture	---	←NO	YES→	---
1 class, monoculture (1 species comprises 90% of total cover)	---	NA	NA	NA

Comments: The AA consists of palustrine emergent wetlands (PEM), scrub-shrub (young PSS) and an aquatic bed in the deeper depression.

Wetland/Site #(s): Creation

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

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

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: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	---	---	---	---	0L

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

14B. HABITAT FOR PLANTS OR ANIMALS RATED S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM
Do not include species listed in 14A above.

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

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: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
S1 Species Functional Point/Rating	---	---	---	---	---	---	---
S2 and S3 Species Functional Point/Rating	---	---	---	---	.2L	---	---

Sources for documented use (e.g. observations, records): MTNHP, 2013 field observations. In 2016 screeching from a young golden eagle were heard upon arrival at the site (early morning).

14C. GENERAL WILDLIFE HABITAT RATING

i. Evidence of Overall Wildlife Use in the AA: Check substantial, moderate, or low based on supporting evidence.

☐ ***Substantial:*** Based on any of the following [check].
- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ☐ presence of extremely limiting habitat features not available in the surrounding area
- ☐ interview with local biologist 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
- ☐ interview with local biologist with knowledge of 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
- ☐ interview with local biologist 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 manual 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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
☐ **Moderate Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

iii. Rating: Use the conclusions from i and ii above and the matrix below to select the functional point and rating.

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)**			
	☒ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **Low**
☐ **Substantial**	---	---	---	---
☒ **Moderate**	.9H	---	---	---
☐ **Minimal**	---	---	---	---

Comments: There is an active bald eagle (Haliaeetus leucocephalus) nest directly southwest of the site on the west side of the Shields River, the project site is within the primary habitat zone for bald eagles. Food plots located along portions of the eastern property boundary provide a supplemental food source for wildlife throughout the year.

Wetland/Site #(s): Creation

14D. GENERAL FISH HABITAT ☒ **NA** (proceed to 14E)

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 the NA box and proceed to 14E.

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].

Type of Fishery: ☐ Cold Water (**CW**) ☐ Warm Water (**WW**) **Use the CW or WW guidelines in the manual to complete the matrix.**

i. Habitat Quality and Known / Suspected Fish Species in AA: Use matrix to select the functional point 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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier II or **Native Game** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier III or **Introduced Game** fish	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Non-Game Tier IV or **No** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Sources used for identifying fish spp. potentially found in AA: _____

ii. Modified Rating: NOTE: Modified score cannot exceed 1.0 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?* ☐ **YES**, reduce score in **i** by 0.1 = __ or ☒ **N0**

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area; specify in comments) for native fish or introduced game fish? ☐ **YES**, add to score in **i** or **iia** 0.1 = __ or ☒ **N0**

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

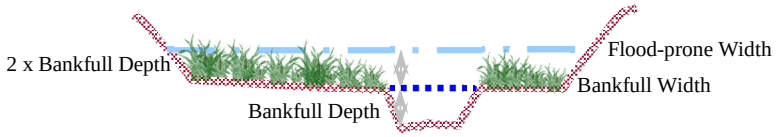
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

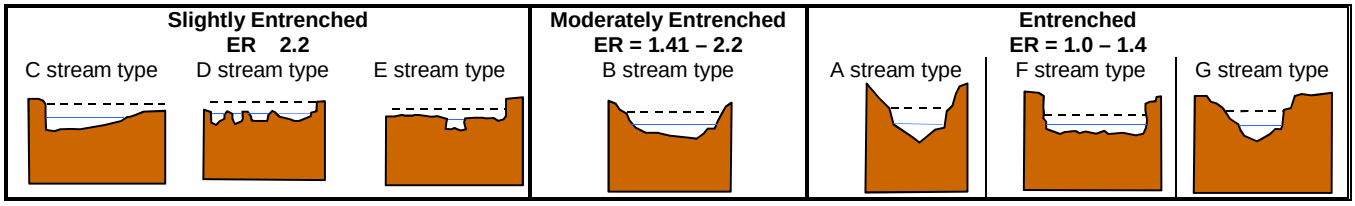
Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

Entrenchment Ratio (ER) Estimation (see manual for additional guidance). Entrenchment ratio = (flood-prone width) / (bankfull width).
Flood-prone width = estimated horizontal projection of where 2 X maximum bankfull depth elevation intersects the floodplain on each side of the stream.

133 / 28 = 4.75

flood prone width / bankfull width = entrenchment ratio





i. Rating: Working from top to bottom, use the matrix below to select the functional point 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		
Percent 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**	---	---	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	.5M	---	---	---	---	---	---

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? ☐ YES ☒ NO **Comments:** AA receives overbank flow from Shields River during high flow events.

Wetland/Site #(s): Creation

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

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.
If no wetlands in the AA are subject to flooding or ponding, then check the NA box and proceed to 14G.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see manual 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**	---	---	---	---	---	---	---	---	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	.8H	---	---	---	---	---	---	---

Comments: (9.34 acre wetland) * (1 ft. max depth at highwater) = 9.34 acre feet.

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

Applies to wetland with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input.
If no wetlands in the AA are subject to such input, check the NA box and proceed to 14H.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Sediment, Nutrient, and Toxicant Input Levels within AA	**AA receives or surrounding land use has potential to deliver 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 is on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**			
% 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**	---	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	.9H	---	---	---	---	---	---	---

Comments: There was evidence of ponding and flooding in 2011, 2012, 2014, 2015 and 2016. There was no evidence of ponding or flooding in 2013.

14H. SEDIMENT / SHORELINE STABILIZATION ☐ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action.
If 14H does not apply, check the NA box and proceed to 14I.

% 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%**	---	---	---
☒ **35-64%**	---	.6M	---
☐ **< 35%**	---	---	---

Comments: Deep-rooted species observed in 2016 include bulrush, spikerush, sedges and rushes.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Level of Biological Activity: Synthesis of wildlife and fish habitat rates (select).

General Fish Habitat Rating (14Diii)	**General Wildlife Habitat Rating (14Ciii)**		
	☐ **E/H**	☒ **M**	☐ **L**
☐ **E/H**	---	---	---
☐ **M**	---	---	---
☐ **L**	---	---	---
☒ **NA**	---	M	---

ii. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14Ii); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to the duration of surface water in the AA, where P/P, S/I, and T/E were previously defined, and A = "absent" [see manual 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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
S/I	---	---	.7M	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
T/E/A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Creation

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT (continued)

iii. Modified Rating: Note: Modified score cannot exceed 1.0 or be less than 0.1.

Vegetated Upland Buffer: 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).
Is there an average 50-foot wide vegetated upland buffer around 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = .8H ☐ **NO**

iv. Final Score and 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 and 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 select the functional point and rating.

Criteria	Duration of Saturation at AA Wetlands ***FROM GROUNDWATER DISCHARGE*** or ***WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** ☐ **P/P**	☒ **S/I**	☐ **T**	☐ **None**
☒ **Groundwater Discharge or Recharge**	---	.7M	---	---
☐ **Insufficient Data/Information**	---			

Comments: Shallow surface water or soil saturation across most of the constructed wetlands in 2016.

14K. UNIQUENESS

i. Rating: Working from top to bottom, use the matrix below to select the functional point 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)	---	---	---	---	---	---	---	.4M	---
☐ **Moderate Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: Vegetation is becoming well established with tree and shrub root suckers colonizing the northern mitigation boundary and portions of wetland cell 3.

14L. RECREATION / EDUCATION POTENTIAL ☐ NA (proceed to Overall Summary and Rating page)
Affords 'bonus' points if AA provides a recreational or educational opportunity.

i. Is the AA a known or potential recreational or educational site? ☒ **YES**, go to ii. ☐ **NO**, check the NA box.

ii. Check categories that apply to the AA: ☒ Educational/Scientific Study ☒ Consumptive Recreational ☐ Non-consumptive recreational ☐ Other: _____

iii. Rating: Use the matrix below to select the functional point and rating.

Known or Potential Recreational or Educational Area	**Known**	**Potential**
Public ownership or public easement with general public access (no permission required)	---	---
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	.05L

Comments: Permission is required for access to this site.

15. GENERAL SITE NOTES: _____

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	low 0.00	1.00	0	
B. MT Natural Heritage Program Species Habitat	low 0.20	1.00	1.868	
C. General Wildlife Habitat	high 0.90	1.00	8.406	*
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	mod 0.50	1.00	4.67	
F. Short and Long Term Surface Water Storage	high 0.80	1.00	7.472	*
G. Sediment / Nutrient / Toxicant Removal	high 0.90	1.00	8.406	*
H. Sediment / Shoreline Stabilization	mod 0.60	1.00	5.604	
I. Production Export / Food Chain Support	high 0.80	1.00	7.472	*
J. Groundwater Discharge / Recharge	mod 0.70	1.00	6.538	
K. Uniqueness	mod 0.40	1.00	3.736	
L. Recreation / Education Potential (bonus point)	low 0.05		0.467	
Total Points	**5.85**	**10**	**54.639 Total Functional Units**	
Percent of Possible Score 55% (round to nearest whole number)				

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; if not 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 (AA) RATING: Check the 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 #:** STPX-0034(14) **3. Control #:** 4866

3. Evaluation Date: 6/24/2016 **4. Evaluator(s):** C. Hoschouer, C. Seibert **5. Wetland/Site #(s):** Preservation

6. Wetland Location(s): Township 4 N, Range 9 E, Section 32; Township ___ N, Range ___ E, Section _____

Approximate Stationing or Roadposts: NA

Watershed: 13 - Upper Yellowstone **County:** _ Park _ _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

- ☐ **Wetland potentially affected by MDT project**
- ☐ **Mitigation wetlands; pre-construction**
- ☐ **Mitigation wetlands; post-construction**
- ☒ **Other** Preserved PSS/PFO/PEM Habtiat

8. Wetland Size (acre): _____ (visually estimated)
1.1 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 1.1 (measured, e.g. GPS)

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA (See manual for definitions.)

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

Comments: _____

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin; see manual.)
common

12. GENERAL CONDITION OF AA

i. Disturbance: Use matrix below to select the appropriate response; see manual for Montana listed noxious weed and aquatic nuisance vegetation species 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	---
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%.	---	---	---
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%.	---	---	---

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, and other exotic vegetation 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 one is forested) classes	high	NA	NA	NA
2 (or 1 if forested) classes	---	NA	NA	NA
1 class, but not a monoculture	---	←NO	YES→	---
1 class, monoculture (1 species comprises 90% of total cover)	---	NA	NA	NA

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

Wetland/Site #(s): Preservation

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

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

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: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	---	---	---	---	0L

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

14B. HABITAT FOR PLANTS OR ANIMALS RATED S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM
Do not include species listed in 14A above.

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

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: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
S1 Species Functional Point/Rating	---	---	---	---	---	---	---
S2 and S3 Species Functional Point/Rating	---	---	---	---	.2L	---	---

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

☐ ***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
- ☐ interview with local biologist 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
- ☐ interview with local biologist with knowledge of 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
- ☐ interview with local biologist 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 manual 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	---	---	---	---	---	---	---	---	---	---	---	---	---	---
☐ **Moderate Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

iii. Rating: Use the conclusions from i and ii above and the matrix below to select the functional point and rating.

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)**			
	☒ **Exceptional**	☐ **High**	☐ **Moderate**	☐ **Low**
☐ **Substantial**	---	---	---	---
☒ **Moderate**	.9H	---	---	---
☐ **Minimal**	---	---	---	---

Comments: Moderate use of site by moose, deer, golden eagle, and other avian species. There is a bald eagle (Haliaeetus leucocephalus) nest directly southwest of the site on the west side of the Shields River,a young golden eagle was heard during the site monitoring. Tthe project site is within the primary habitat zone for bald eagles. Food plots east of the mitigation site will also encourage use by wildlife.

Wetland/Site #(s): Preservation

14D. GENERAL FISH HABITAT ☒ **NA** (proceed to 14E)

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 the NA box and proceed to 14E.

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].

Type of Fishery: ☐ Cold Water (**CW**) ☐ Warm Water (**WW**) **Use the CW or WW guidelines in the manual to complete the matrix.**

i. Habitat Quality and Known / Suspected Fish Species in AA: Use matrix to select the functional point 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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier II or **Native Game** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier III or **Introduced Game** fish	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Non-Game Tier IV or **No** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Sources used for identifying fish spp. potentially found in AA: _____

ii. Modified Rating: NOTE: Modified score cannot exceed 1.0 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?* ☐ **YES**, reduce score in **i** by 0.1 = __ or ☒ **N0**

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area; specify in comments) for native fish or introduced game fish? ☐ **YES**, add to score in **i** or **iia** 0.1 = __ or ☒ **N0**

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

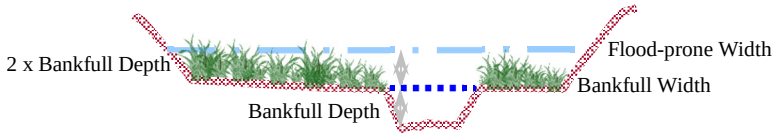
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

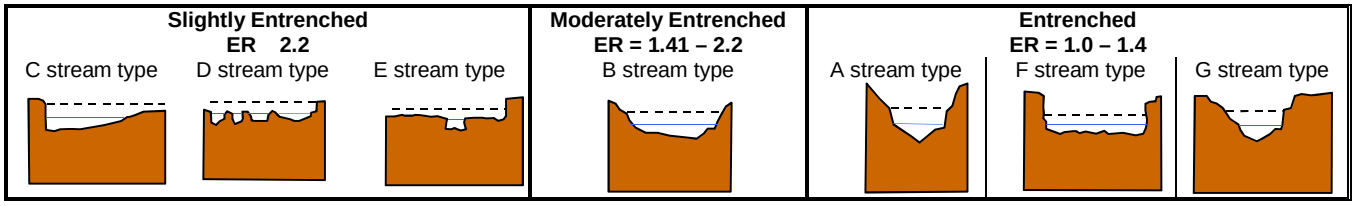
Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

Entrenchment Ratio (ER) Estimation (see manual for additional guidance). Entrenchment ratio = (flood-prone width) / (bankfull width).
Flood-prone width = estimated horizontal projection of where 2 X maximum bankfull depth elevation intersects the floodplain on each side of the stream.

133 / 28 = 4.75

flood prone width / bankfull width = entrenchment ratio





i. Rating: Working from top to bottom, use the matrix below to select the functional point 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		
Percent 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**	---	.9H	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---	---

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? ☐ YES ☒ NO **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.

Wetland/Site #(s): Preservation

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

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.
If no wetlands in the AA are subject to flooding or ponding, then check the NA box and proceed to 14G.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see manual 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**	---	---	---	---	.6M	---	---	---	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	---	---	---	---	---	---	---	---

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 ☐ **NA** (proceed to 14H)

Applies to wetland with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input.
If no wetlands in the AA are subject to such input, check the NA box and proceed to 14H.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Sediment, Nutrient, and Toxicant Input Levels within AA	**AA receives or surrounding land use has potential to deliver 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 is on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**			
% 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	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---

Comments: Wetland vegetation cover exceeds 70%. AA contains restricted outlet.

14H. SEDIMENT / SHORELINE STABILIZATION ☒ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action.
If 14H does not apply, check the NA box and proceed to 14I.

% 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%**	---	---	---
☐ **35-64%**	---	---	---
☐ **< 35%**	---	---	---

Comments: No shoreline in the project area.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Level of Biological Activity: Synthesis of wildlife and fish habitat rates (select).

General Fish Habitat Rating (14Diii)	**General Wildlife Habitat Rating (14Ciii)**		
	☒ **E/H**	☐ **M**	☐ **L**
☐ **E/H**	---	---	---
☐ **M**	---	---	---
☐ **L**	---	---	---
☒ **NA**	H	---	---

ii. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14Ii); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to the duration of surface water in the AA, where P/P, S/I, and T/E were previously defined, and A = "absent" [see manual 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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
S/I	---	---	---	---	---	---	.8H	---	---	---	---	---	---	---	---	---	---	---
T/E/A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Preservation

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT (continued)

iii. Modified Rating: Note: Modified score cannot exceed 1.0 or be less than 0.1.

Vegetated Upland Buffer: 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).
Is there an average 50-foot wide vegetated upland buffer around 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 0.90 ☐ **NO**

iv. Final Score and Rating: .9H **Comments:** There is a restricted surface water outlet to the south.

14J. GROUNDWATER DISCHARGE / RECHARGE
Check the appropriate indicators in i and 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 select the functional point and rating.

Criteria	Duration of Saturation at AA Wetlands ***FROM GROUNDWATER DISCHARGE*** or ***WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** ☐ **P/P**	☒ **S/I**	☐ **T**	☐ **None**
☒ **Groundwater Discharge or Recharge**	---	.7M	---	---
☐ **Insufficient Data/Information**	---			

Comments: _____

14K. UNIQUENESS

i. Rating: Working from top to bottom, use the matrix below to select the functional point 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)	---	---	---	---	.6M	---	---	---	---
☐ **Moderate Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

Comments: Site disturbance is low and structural diversity is high.

14L. RECREATION / EDUCATION POTENTIAL ☐ NA (proceed to Overall Summary and Rating page)
Affords 'bonus' points if AA provides a recreational or educational opportunity.

i. Is the AA a known or potential recreational or educational site? ☒ **YES**, go to ii. ☐ **NO**, check the NA box.

ii. Check categories that apply to the AA: ☐ Educational/Scientific Study ☒ Consumptive Recreational ☒ Non-consumptive recreational
☐ Other: _____

iii. Rating: Use the matrix below to select the functional point and rating.

Known or Potential Recreational or Educational Area	**Known**	**Potential**
Public ownership or public easement with general public access (no permission required)	---	---
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	.05L

Comments: Permission is required for access to this site.

15. GENERAL SITE NOTES: _____

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	low 0.00	1.00	0	
B. MT Natural Heritage Program Species Habitat	low 0.20	1.00	0.22	
C. General Wildlife Habitat	high 0.90	1.00	0.99	*
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	high 0.90	1.00	0.99	
F. Short and Long Term Surface Water Storage	mod 0.60	1.00	0.66	
G. Sediment / Nutrient / Toxicant Removal	high 1.00	1.00	1.1	*
H. Sediment / Shoreline Stabilization	NA	NA	0	
I. Production Export / Food Chain Support	high 0.90	1.00	0.99	*
J. Groundwater Discharge / Recharge	mod 0.70	1.00	0.77	*
K. Uniqueness	mod 0.60	1.00	0.66	
L. Recreation / Education Potential (bonus point)	low 0.05		0.055	
Total Points	**5.85**	**9**	**6.435 Total Functional Units**	
Percent of Possible Score 65% (round to nearest whole number)				

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; if not 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 (AA) RATING: Check the 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 #:** STPX-0034(14) **3. Control #:** 4866

3. Evaluation Date: 6/24/2016 **4. Evaluator(s):** C. Hoschouer, C. Seibert **5. Wetland/Site #(s):** Restoration

6. Wetland Location(s): Township 4 N, Range 9 E, Section 32; Township ___ N, Range ___ E, Section _____

Approximate Stationing or Roadposts: NA

Watershed: 13 - Upper Yellowstone **County:** _ Park _ _____

7. Evaluating Agency: RESPEC for MDT

Purpose of Evaluation:

- ☐ **Wetland potentially affected by MDT project**
- ☐ **Mitigation wetlands; pre-construction**
- ☐ **Mitigation wetlands; post-construction**
- ☒ **Other** restored channel

8. Wetland Size (acre): _____ (visually estimated)
1.56 (measured, e.g. GPS)

9. Assessment Area (AA) Size (acre): _____ (visually estimated)
(see manual for determining AA) 1.56 (measured, e.g. GPS)

10. CLASSIFICATION OF WETLAND AND AQUATIC HABITATS IN AA (See manual for definitions.)

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% OF AA
Riverine	Emergent Wetland	Excavated	Seasonal / Intermittent	100

Comments: _____

11. ESTIMATED RELATIVE ABUNDANCE (of similarly classified sites within the same Major Montana Watershed Basin; see manual.)
common

12. GENERAL CONDITION OF AA

i. Disturbance: Use matrix below to select the appropriate response; see manual for Montana listed noxious weed and aquatic nuisance vegetation species 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	---
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%.	---	---	---
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%.	---	---	---

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. 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, and other exotic vegetation 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 one is forested) classes	---	NA	NA	NA
2 (or 1 if forested) classes	---	NA	NA	NA
1 class, but not a monoculture	mod	←NO	YES→	---
1 class, monoculture (1 species comprises 90% of total cover)	---	NA	NA	NA

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

Wetland/Site #(s): Restoration

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

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

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: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
Functional Point/Rating	---	---	---	---	---	---	0L

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

14B. HABITAT FOR PLANTS OR ANIMALS RATED S1, S2, OR S3 BY THE MONTANA NATURAL HERITAGE PROGRAM
Do not include species listed in 14A above.

i. AA is Documented (D) or Suspected (S) to contain: Check box based on definitions in manual.

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: Based on the strongest habitat chosen in 14A(i) above, select the corresponding functional point and rating.

Highest Habitat Level	Doc/Primary	Sus/Primary	Doc/Secondary	Sus/Secondary	Doc/Incidental	Sus/Incidental	None
S1 Species Functional Point/Rating	---	---	---	---	---	---	---
S2 and S3 Species Functional Point/Rating	---	---	---	---	.2L	---	---

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

☐ ***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
- ☐ interview with local biologist 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
- ☐ interview with local biologist with knowledge of 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
- ☐ interview with local biologist 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 manual 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)	---	---	---	---	---	---	---	---	---	H	---	---	---	---	---	---	---	---	---	---
☐ **Moderate Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (see #12i)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

iii. Rating: Use the conclusions from i and ii above and the matrix below to select the functional point and rating.

Evidence of Wildlife Use (i)	**Wildlife Habitat Features Rating (ii)**			
	☐ **Exceptional**	☒ **High**	☐ **Moderate**	☐ **Low**
☐ **Substantial**	---	---	---	---
☒ **Moderate**	---	.7M	---	---
☐ **Minimal**	---	---	---	---

Comments: AA has frequent deer and moose sightings. Food plots located adjacent/east of the project boundary provide supplemental food for wildlife. There is an active bald eagle (Haliaeetus leucocephalus) nest directly southwest of the site on the west side of the Shields River, a young golden eagle was heard during the site monitoring, the project site is within the primary habitat zone for bald eagles. .

Wetland/Site #(s): Restoration

14D. GENERAL FISH HABITAT ☒ **NA** (proceed to 14E)

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 the NA box and proceed to 14E.

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].

Type of Fishery: ☐ Cold Water (**CW**) ☐ Warm Water (**WW**) **Use the CW or WW guidelines in the manual to complete the matrix.**

i. Habitat Quality and Known / Suspected Fish Species in AA: Use matrix to select the functional point 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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier II or **Native Game** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Tier III or **Introduced Game** fish	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FWP Non-Game Tier IV or **No** fish species	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Sources used for identifying fish spp. potentially found in AA: _____

ii. Modified Rating: NOTE: Modified score cannot exceed 1.0 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?* ☐ **YES**, reduce score in **i** by 0.1 = __ or ☒ **N0**

b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area; specify in comments) for native fish or introduced game fish? ☐ **YES**, add to score in **i** or **iia** 0.1 = __ or ☒ **N0**

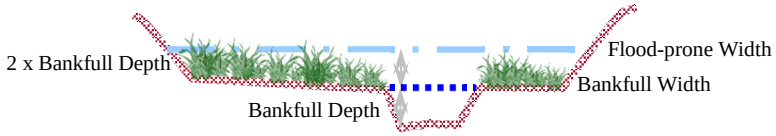
iii. Final Score and Rating: _ **Comments:** Although activated during high-flow events within the Shields River, no permanent fish habitat is present within AA.

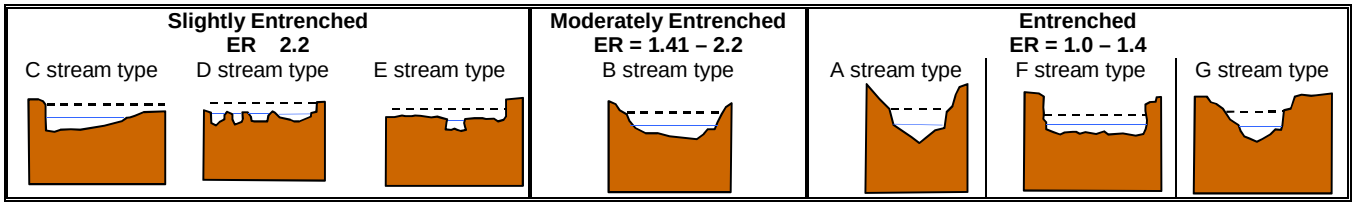
14E. FLOOD ATTENUATION ☐ **NA** (proceed to 14F)

Applies only to wetlands that are subject to flooding via in-channel or overbank flow.
If wetlands in AA are not flooded from in-channel or overbank flow, check the NA box and proceed to 14F.

Entrenchment Ratio (ER) Estimation (see manual for additional guidance). Entrenchment ratio = (flood-prone width) / (bankfull width).
Flood-prone width = estimated horizontal projection of where 2 X maximum bankfull depth elevation intersects the floodplain on each side of the stream.

133 / 28 = 4.75
flood prone width / bankfull width = entrenchment ratio





i. Rating: Working from top to bottom, use the matrix below to select the functional point 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		
Percent 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**	---	---	.6M	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---	---

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? ☐ YES ☒ NO **Comments:** Outlet is restricted. AA subjet to overflow from Shields River and empties into old meanders of the Shields River at the south end of AA.

Wetland/Site #(s): Restoration

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

Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.
If no wetlands in the AA are subject to flooding or ponding, then check the NA box and proceed to 14G.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see manual 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**	---	---	---	---	.6M	---	---	---	---
Wetlands in AA flood or pond **< 5 out of 10 years**	---	---	---	---	---	---	---	---	---

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 ☐ **NA** (proceed to 14H)

Applies to wetland with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input.
If no wetlands in the AA are subject to such input, check the NA box and proceed to 14H.

i. Rating: Working from top to bottom, use the matrix below to select the functional point and rating.

Sediment, Nutrient, and Toxicant Input Levels within AA	**AA receives or surrounding land use has potential to deliver 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 is on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.**			
% 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	---	---	---	---	---	---	---
AA contains **unrestricted outlet**	---	---	---	---	---	---	---	---

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

14H. SEDIMENT / SHORELINE STABILIZATION ☐ **NA** (proceed to 14I)

Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action.
If 14H does not apply, check the NA box and proceed to 14I.

% 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%**	---	.9H	---
☐ **35-64%**	---	---	---
☐ **< 35%**	---	---	---

Comments: Increased vegetation development from 2013 to 2016 of species with high stability ratings including Salix, Carex and Juncus species.

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT

i. Level of Biological Activity: Synthesis of wildlife and fish habitat rates (select).

General Fish Habitat Rating (14Diii)	**General Wildlife Habitat Rating (14Ciii)**		
	☐ **E/H**	☒ **M**	☐ **L**
☐ **E/H**	---	---	---
☐ **M**	---	---	---
☐ **L**	---	---	---
☒ **NA**	---	M	---

ii. Rating: Working from top to bottom, use the matrix below to select the functional point and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14Ii); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to the duration of surface water in the AA, where P/P, S/I, and T/E were previously defined, and A = "absent" [see manual 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	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
S/I	---	---	---	---	---	---	---	---	.6M	---	---	---	---	---	---	---	---	---
T/E/A	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Wetland/Site #(s): Restoration

14I. PRODUCTION EXPORT / FOOD CHAIN SUPPORT (continued)

iii. Modified Rating: Note: Modified score cannot exceed 1.0 or be less than 0.1.

Vegetated Upland Buffer: 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).
Is there an average 50-foot wide vegetated upland buffer around 75% of the AA's perimeter? ☒ **YES**, add 0.1 to score in **ii** = 0.70 ☐ **NO**

iv. Final Score and 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 and 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 select the functional point and rating.

Criteria	Duration of Saturation at AA Wetlands ***FROM GROUNDWATER DISCHARGE*** or ***WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** ☐ **P/P**	☒ **S/I**	☐ **T**	☐ **None**
☒ **Groundwater Discharge or Recharge**	---	.7M	---	---
☐ **Insufficient Data/Information**	---			

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 select the functional point 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)	---	---	---	---	---	---	---	.4M	---
☐ **Moderate Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---
☐ **High Disturbance** at AA (#12i)	---	---	---	---	---	---	---	---	---

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

14L. RECREATION / EDUCATION POTENTIAL ☐ NA (proceed to Overall Summary and Rating page)
Affords 'bonus' points if AA provides a recreational or educational opportunity.

i. Is the AA a known or potential recreational or educational site? ☒ **YES**, go to ii. ☐ **NO**, check the NA box.

ii. Check categories that apply to the AA: ☒ Educational/Scientific Study ☐ Consumptive Recreational ☐ Non-consumptive recreational ☐ Other: _____

iii. Rating: Use the matrix below to select the functional point and rating.

Known or Potential Recreational or Educational Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	---	---
Private ownership with general public access (no permission required)	---	---
Private or public ownership without general public access, or requiring permission for public access	---	.05L

Comments: Permission is required for site access.

15. GENERAL SITE NOTES: _____

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	low 0.00	1.00	0	
B. MT Natural Heritage Program Species Habitat	low 0.20	1.00	0.312	
C. General Wildlife Habitat	mod 0.70	1.00	1.092	
D. General Fish Habitat	NA	NA	0	
E. Flood Attenuation	mod 0.60	1.00	0.936	
F. Short and Long Term Surface Water Storage	mod 0.60	1.00	0.936	
G. Sediment / Nutrient / Toxicant Removal	high 1.00	1.00	1.56	*
H. Sediment / Shoreline Stabilization	high 0.90	1.00	1.404	*
I. Production Export / Food Chain Support	mod 0.70	1.00	1.092	*
J. Groundwater Discharge / Recharge	mod 0.70	1.00	1.092	*
K. Uniqueness	mod 0.40	1.00	0.624	
L. Recreation / Education Potential (bonus point)	low 0.05		0.078	
Total Points	**5.85**	**10**	**9.126 Total Functional Units**	
Percent of Possible Score 59% (round to nearest whole number)				

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; if not 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 (AA) RATING: Check the 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 Location: East Boundary
Bearing: 250 degrees Year: 2010



Photo Point: 1 Location: East Boundary
Bearing: 250 degrees Year: 2013



Photo Point: 1 Location: East Boundary
Bearing: 250 degrees Year: 2014



Photo Point: 1 Location: East Boundary
Bearing: 250 degrees Year: 2015



Photo Point: 1 Location: East Boundary
Bearing: 250 degrees Year: 2016



Photo Point: 2 Location: Northeast Corner
Bearing: 200 degrees Year: 2010



Photo Point: 2 Location: Northeast Corner
Bearing: 200 degrees Year: 2013



Photo Point: 2 Location: Northeast Corner
Bearing: 200 degrees Year: 2014



Photo Point: 2 Location: Northeast Corner
Bearing: 200 degrees Year: 2015



Photo Point: 2 Location: Northeast Corner
Bearing: 200 degrees Year: 2016



Photo Point: 3 Location: Northwest Corner
Bearing: 100 degrees Year: 2010



Photo Point: 3 Location: Northwest Corner
Bearing: 100 degrees Year: 2013



Photo Point: 3 Location: Northwest Corner
Bearing: 100 degrees Year: 2014



Photo Point: 3 Location: Northwest Corner
Bearing: 100 degrees Year: 2015



Photo Point: 3 Location: Northwest Corner
Bearing: 100 degrees Year: 2016



Photo Point: 4A Location: Shields Bank DS
Bearing: 170 degrees Year: 2010



Photo Point: 4A Location: Shields Bank DS
Bearing: 170 degrees Year: 2013



Photo Point: 4A Location: Shields Bank DS
Bearing: 170 degrees Year: 2014



Photo Point: 4A Location: Shields Bank DS
Bearing: 170 degrees Year: 2015



Photo Point: 4A Location: Shields Bank DS
Bearing: 170 degrees Year: 2016



Photo Point: 4B Location: Shields Bank US
Bearing: 20 degrees Year: 2010



Photo Point: 4B Location: Shields Bank US
Bearing: 20 degrees Year: 2013



Photo Point: 4B Location: Shields Bank US
Bearing: 20 degrees Year: 2014



Photo Point: 4B Location: Shields Bank US
Bearing: 20 degrees Year: 2015



Photo Point: 4B Location: Shields Bank US
Bearing: 20 degrees Year: 2016



Photo Point: 5 Location: West Boundary
Bearing: 90 degrees Year: 2010



Photo Point: 5 Location: West Boundary
Bearing: 90 degrees Year: 2013



Photo Point: 5 Location: West Boundary
Bearing: 90 degrees Year: 2014



Photo Point: 5 Location: West Boundary
Bearing: 90 degrees Year: 2015



Photo Point: 5 Location: West Boundary
Bearing: 90 degrees Year: 2016



Photo Point: 6 Location: Southwest Corner
Bearing: 0 degrees Year: 2010



Photo Point: 6 Location: Southwest Corner
Bearing: 0 degrees Year: 2013



Photo Point: 6 Location: Southwest Corner
Bearing: 0 degrees Year: 2014



Photo Point: 6 Location: Southwest Corner
Bearing: 0 degrees Year: 2015



Photo Point: 6 Location: Southwest Corner
Bearing: 0 degrees Year: 2016



Photo Point: 7 Location: Southeast Corner
Bearing: 340 degrees Year: 2010



Photo Point: 7 Location: Southeast Corner
Bearing: 340 degrees Year: 2013



Photo Point: 7 Location: Southeast Corner
Bearing: 340 degrees Year: 2014



Photo Point: 7 Location: Southeast Corner
Bearing: 340 degrees Year: 2015

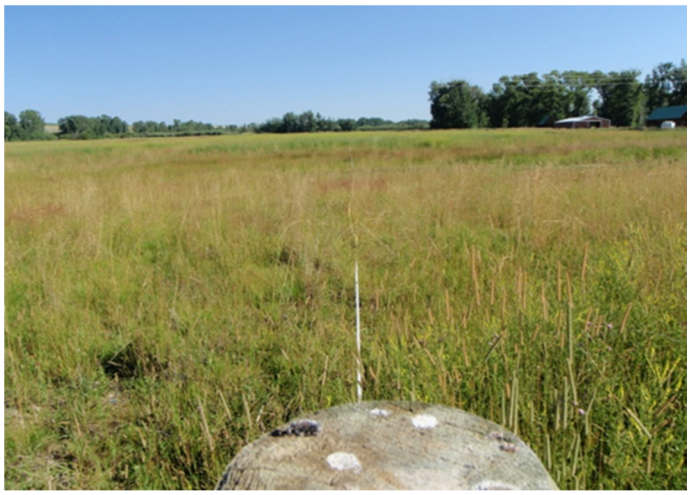


Photo Point: 7 Location: Southeast Corner
Bearing: 340 degrees Year: 2016

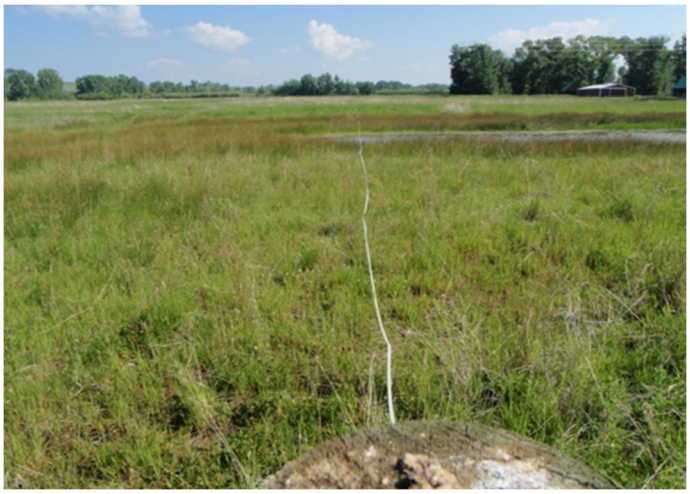
Easton Ranch: Transect Photos – Page 1



Transect 1: Start Location: Veg Com 8 foreground
Bearing: 5 degrees Year: 2010



Transect 1: Start Location: Veg Com 8 foreground
Bearing: 5 degrees Year: 2013



Transect 1: Start Location: Veg Com 8 foreground
Bearing: 5 degrees Year: 2014



Transect 1: Start Location: Veg Com 13 foreground
Bearing: 5 degrees Year: 2015



Transect 1: Start Location: Veg Com 13 foreground
Bearing: 5 degrees Year: 2016



Transect 1: End Location: Veg Com 8 foreground
Bearing: 185 degrees Year: 2010



Transect 1: End Location: Veg Com 8 foreground
Bearing: 185 degrees Year: 2013



Transect 1: End Location: Veg Com 8 foreground
Bearing: 185 degrees Year: 2014



Transect 1: End Location: Veg Com 13 foreground
Bearing: 185 degrees Year: 2015



Transect 1: End Location: Veg Com 13 foreground
Bearing: 185 degrees Year: 2016



Transect 2: Start Location: Veg Com 1 foreground
Bearing: 185 degrees Year: 2010



Transect 2: Start Location: Veg Com 1 foreground
Bearing: 185 degrees Year: 2013



Transect 2: Start Location: Veg Com 1 foreground
Bearing: 185 degrees Year: 2014



Transect 2: Start Location: Veg Com 1 foreground
Bearing: 185 degrees Year: 2015



Transect 2: Start Location: Veg Com 13 foreground
Bearing: 185 degrees Year: 2016



Transect 2: End Location: Veg Com 1 foreground
Bearing: 0 degrees Year: 2010



Transect 2: End Location: Veg Com 1 foreground
Bearing: 0 degrees Year: 2013



Transect 2: End Location: Veg Com 1 foreground
Bearing: 0 degrees Year: 2014



Transect 2: End Location: Veg Com 1 foreground
Bearing: 0 degrees Year: 2015



Transect 2: End Location: Veg Com 1 foreground
Bearing: 0 degrees Year: 2016



Transect 3: Start Location: Veg Com 1 foreground
Bearing: 95 degrees Year: 2010



Transect 3: Start Location: Veg Com 1 foreground
Bearing: 95 degrees Year: 2013



Transect 3: Start Location: Veg Com 1 foreground
Bearing: 95 degrees Year: 2014



Transect 3: Start Location: Veg Com 1 foreground
Bearing: 95 degrees Year: 2015



Transect 3: Start Location: Veg Com 13 foreground
Bearing: 95 degrees Year: 2016

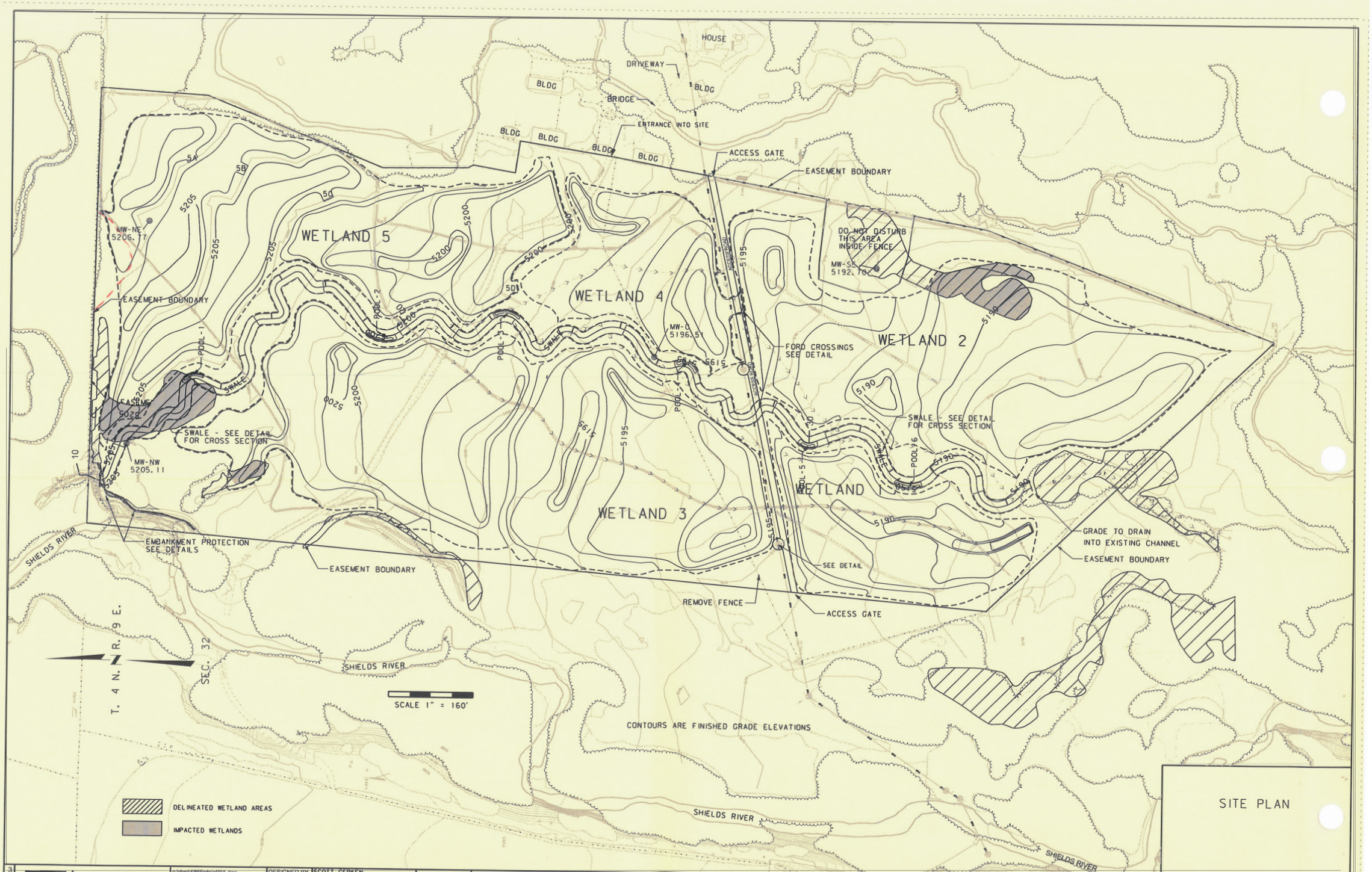
Photo not available	Photo not available
Transect 3: End Location: Veg Com 1 foreground Bearing: 265 degrees Year: 2010	Transect 3: End Location: Veg Com 1 foreground Bearing: 265 degrees Year: 2013
Photo not available	Photo not available
Transect 3: End Location: Veg Com 1 foreground Bearing: 265 degrees Year: 2014	Transect 3: End Location: Veg Com 1 foreground Bearing: 265 degrees Year: 2015
	
Transect 3: End Location: Veg Com 1 foreground Bearing: 265 degrees Year 2016	

Easton Ranch: Data Point Photos – Page 1

	
Data Point: DP1W Location: Veg Com 11 Year: 2016	Data Point: DP1U Location: Veg Com 1 Year: 2016
	
Data Point: DP2W Location: Veg Com 11 Year: 2016	Data Point: DP2U Location: Veg Com 13 Year: 2016

APPENDIX D
PROJECT PLAN SHEETS

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana



SITE PLAN

MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\4866rdpp001.dgn	DESIGNED BY	SCOTT GERKEN	PARK COUNTY	D-2	EASTON WETLAND/STREAM	ARRA 34(26)
serving you with pride	5/12/2009	REVIEWED BY				CSF= 0.99928305 / UPN 4866	SHEET 12 OF 18
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