MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2012

Easton Ranch
Park County, Montana



Prepared for:

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December 2012

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Park County, Montana

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

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

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CCI Project No: MDT.004

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Cover: View of an inundated depression near the south boundary early in the growing season with American mannagrass beginning to emerge.

1. INTRODUCTION

The Easton Ranch Wetland Mitigation 2012 Monitoring Report presents the results of the third year of post-construction monitoring at the Easton Ranch mitigation area. The Montana Department of Transportation (MDT) 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 property is located approximately three miles east of US Highway 89 and four miles northeast of Wilsall (Figure 1). The wetland mitigation conservation easement area encompasses approximately 34 fenced acres and is located east of the Shields River within the boundaries of the larger Easton Family Ranch, the previous landowner. Figures 2 and 3 in Appendix A show the site Monitoring Activity Locations and Mapped Site Features, respectively. The 2008 MDT Mitigation Site Monitoring Form, US Army Corps of Engineers (USACE) Wetland Determination Data Forms Western Mountains, Valleys, and Coast Region (USACE 2010), and the 2008 MDT Montana Wetland Assessment Forms are included in Appendix B. Project area photographs are included in Appendix C and the Project Plan Sheet is included in Appendix D.

The wetland restoration site is located within Watershed 13 – Upper Yellowstone River Basin. Wetlands were developed at this location to provide compensatory mitigation for wetland impacts associated with transportation projects in the Butte District. The Easton Ranch site was selected after an extensive search of potential wetland and stream restoration sites by MDT within the Shields River Valley in cooperation with personnel from the Park Conservation District and the US Department of Agriculture (USDA) Natural Resource Conservation Service Center (NRCS) in Livingston.

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

- Re-establish a previously existing, relic floodplain channel and associated riparian and floodplain wetland areas.
- 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-reference wetland areas located north and south of the project.

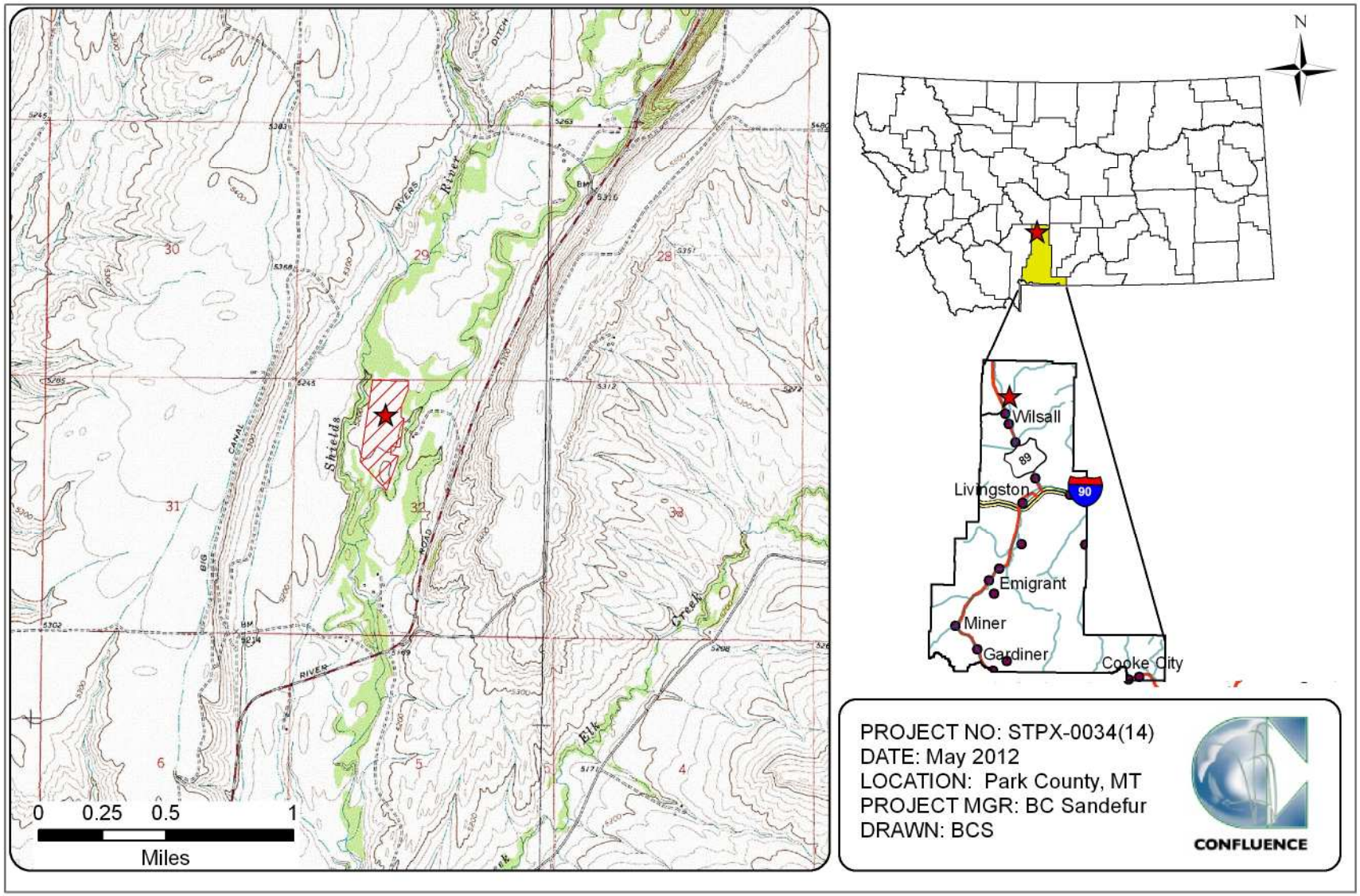


Figure 1. Project location of Easton Ranch Wetland Mitigation Site.

- Re-establish hydrology to approximately 1.56 acres of drained wetlands in the north portion of the site.
- Preserve 1.1 acres of existing scrub/shrub, forested, and palustine emergent communities at several locations within the project area.
- Mimic old meander scars and relic flood channels within the wetland mitigation site.
- Improve water storage capacity and increase the amount of floodplain area across the site.
- Increase the amount of wildlife habitat in this reach of the Shields River.

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

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

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

The USACE approved performance standards are listed below.

1. **Wetland Characteristics**: All restored, created, enhanced, and preserved wetlands within the project limits will meet the three parameter criteria for hydrology, vegetation, and soils established for determining wetland areas as outlined in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *2010 Regional Supplement to the Corps of Engineers Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010).
    a) **Wetland Hydrology Success** will be achieved where wetland hydrology is present as per the technical guidelines in the 1987 Manual and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual.
        (i) Soil saturation will be present for at least 12.5 percent of the growing season.
        (ii) Groundwater wells will be left undisturbed within the site for the purpose of monitoring groundwater elevations during the growing season.

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

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

b) **Hydric Soil Success** will be achieved where hydric soil conditions are present (per the most recent Natural Resource Conservation Service (NRCS) definitions for hydric soil) or appear to be forming, the soil is sufficiently stable to prevent erosion, and the soil is able to support plant cover. Soil sampling will be conducted during the course of the monitoring period to determine if wetland areas are exhibiting characteristics of hydric soils per the 1987 Wetland Manual. Since typical hydric soil indicators may require long periods to form, a lack of distinctive hydric soil features will not be considered a failure if hydrologic and vegetation success is achieved.

c) **Hydrophytic Vegetation Success** will be achieved through the delineation of developing wetlands utilizing the technical guidelines established in the 1987 Wetland Manual and the 2010 Regional Supplement. The following concept of "dominance", as defined in the 1987 Manual, will be applied during future routine wetland determinations in created/restored wetlands: "*Subjectively determine the dominant species by estimating those having the largest relative basal area (woody overstory), greatest height (woody understory), greatest percentage of aerial cover (herbaceous understory), and/or greatest number of stems (woody vines).*"

i. **Woody Plants** – Trees and shrubs are to be installed at various locations to provide structural diversity within the site at the direction of the MDT Reclamation Specialist. Survival of woody plant species planted within the site will be evaluated to determine survival rates and success of the planting each year of the monitoring period. Success of these planted species will be determined by stem counts each year to determine survival rates of the various planted woody species and will also include the evaluation of naturally recruited woody plant species within the site. *"Scrub/shrub wetland habitat will be achieved where 30 percent absolute cover by cuttings, planted and volunteer woody plants is reached within the defined monitoring period or the site is showing signs of progression (e.g. by approximating stem densities and estimating future canopy coverage, or using other appropriate methods) towards that goal at the end of the defined monitoring period."*

ii. **Herbaceous Plants** – At the conclusion of the monitoring period, ocular coverage of desirable hydrophytic vegetation (wetland plants listed as OBL, FACW and FAC) will be at least

80 percent. A wetland seed mix was prepared for this site that included tufted hairgrass (*Deschampsia cespitosa*), Northwest Territory sedge (*Carex utriculata*), Baltic rush (*Juncus balticus*), American sloughgrass (*Beckmannia syzigachne*), American mannagrass (*Glyceria grandis*), bluejoint reedgrass (*Calamagrostis canadensis*).

2. **Wetland Acreage Development** will provide 34.04 acres of emergent and scrub/shrub wetlands within the project site (Table 1 and Project Plan Sheet, Appendix D).
    a) Emergent wetlands will comprise approximately 70 to 75 percent of the site.
    b) Scrub/shrub wetland and riparian areas will comprise 15 to 20 percent of the site primarily along the proposed stream corridor and between created wetlands.
    c) Open water will comprise approximately less than 5 percent of the total wetland area within the site after final monitoring.

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

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

coordinate a field meeting for joint evaluation and consultation on remediation.

5. **Upland Buffer Success** will be achieved when the noxious weeds do not exceed 10 percent of cover within the buffer areas on site. Any area within the creditable buffer zone disturbed by project construction must have at least 50 percent aerial cover of non-weed species by the end of the monitoring period.

6. **Weed Control** will be based upon annual monitoring of the site to determine weed species and degree of infestation within the site, and control measures based upon the monitoring results will be implemented by MDT to minimize and/or eliminate the intrusion of State Listed Noxious weed species within the site. The MDT will manage the wetland conservation easement area to meet a goal of having less than 5 percent absolute cover of state listed noxious weed species across the site.

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

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

2. METHODS

The third year of monitoring was completed on June 26, 2012. Information for the Mitigation Monitoring Form and Wetland Determination Data Form was entered electronically in the field on a palmtop computer during the field investigation (Appendix B). Monitoring activity sites were located with a global positioning system (GPS) as shown on Figure 2 (Appendix A). Information collected included a wetland delineation, vegetation community mapping, vegetation transect monitoring, soil and hydrology data collection, bird and wildlife use documentation, photographic documentation, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

The presence of hydrological indicators as outlined on the Wetland Determination Data Form was assessed at four data points established within the project area. The hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on the electronic Wetland Determination Data Form (Appendix B). Hydrologic assessments allow evaluation of mitigation criteria addressing inundation/saturation requirements.

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

2.2. Vegetation

The boundaries of the dominant vegetation communities were determined in the field during the active growing season and subsequently delineated on the 2012 aerial photograph. Percent cover of dominant species within a community type was visually estimated and recorded using the following classes: 0 (less than 1 percent), 1 (1 to 5 percent), 2 (6 to10 percent), 3 (11 to 20 percent), 4 (21 to 50 percent), and 5 (greater than 50 percent) (Appendix B). Community types were named based on the dominant vegetation species that characterized each mapped polygon (Figure 3, Appendix A).

Temporal changes in vegetation were evaluated through annual assessments of static belt transects established in June, 2010 (Figure 2, Appendix A). Vegetation composition was assessed and recorded along three vegetation belt transects (T-1, T-2, T-3) approximately 10 feet wide and 1376, 1333, and 733 feet long, respectively (Figure 2, Appendix A). The length of transect T-1 was misreported in 2010 as 1072 feet. Transects T-2 and T-3 traverse the floodplain channel corridor and banks to provide an assessment of root stability indices of the developing riparian and wetland plant species (Figure 2, Appendix A).

The transect locations were recorded with a resource-grade GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent aerial cover of each vegetation species within the belt transect was estimated using the same values and cover ranges used for the polygon data on the 2012 aerial photograph (Figure 3, Appendix B). Photographs were taken at the endpoints of each transect during the monitoring event (Appendix C).

The survival of woody species planted onsite was recorded during monitoring. Survival rates will be evaluated annually. The location of noxious weeds was

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

2.3. Soil

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

2.4. Wetland Delineation

Waters of the U.S. including special aquatic sites and jurisdictional wetlands were delineated throughout the project area in accordance with criteria established in the 1987 Manual and the 2010 Regional Supplement. 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 jurisdictional. The name and indicator status of plant species was derived from the Draft 2012 National Wetland Plant List (NWPL) (Lichvar and Kartesz. 2009). Previous years' reports used the 1988 National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). The 2012 NWPL scientific plant names were used in this report. Many common names used in the 2012 NWPL appear incomplete or erroneous. When used in this report, 2012 NWPL common names that appear to be incomplete or erroneous are provided with parenthetical clarification. For example, the common given name for the plant *Agrostis exarata* in the 2012 NWPL is "spiked bent". As this is likely an error, this species' common name would be reported here as "spiked bent (grass)". 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 electronically on the Wetland Determination Data Form (Appendix B).

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was classified as an atypical situation, potential problem area, or special aquatic site, i.e., mudflat. The wetland boundary was identified on the 2012 aerial photograph.

Wetland areas were estimated using geographic information system (GIS) methods.

2.5. Wildlife

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

2.6. Functional Assessment

The 2008 MDT Montana Wetland Assessment Method (Berglund and McEldowney 2008) was used to evaluate functions and values on the site from 2010 to 2012. This method provides an objective means of assigning wetlands an overall rating and provides regulators a means of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values (Berglund and McEldowney 2008). Field data for this assessment were collected during the site visit. Wetland Assessment Forms were completed for three separate assessment areas (AA) within mitigation site (Appendix B).

2.7. Photo Documentation

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

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2012 monitoring season. Points were collected using WAAS-enabled differential correction satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, imported into GIS, and presented in Montana State Plane Single Zone NAD 83 meters. Site features and survey points that were located with GPS included fence boundaries, photograph points, transect endpoints, and wetland data points.

2.9. Maintenance Needs

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

3. RESULTS

3.1. Hydrology

Climate data from the meteorological station at Wilsall 8 ENE, Montana (249023), recorded an average annual precipitation rate of 20.28 inches from April 1957 to December 2011 (Western Region Climate Center [WRCC} 2010). The annual precipitation rate recorded in 2010 and 2011 was 24.15 inches and 18.03 inches, respectively. The historic precipitation average from January to August was 15.06 inches. The precipitation totals for this same period was 17.56 inches (2010), 13.36 inches (2011), and 10.32 inches (2012). This data indicates 2012 received 4.74 (31%) fewer inches of precipitation than the long-term average.

The irrigation diversion system located upgradient of the wetland cells was closed during the 2011 and 2012 investigations. Approximately five percent of the site was inundated with surface water from spring runoff in 2012 at depths ranging from 0 to 1.5 feet. The average depth was 0.2 feet and the depth at the emergent vegetation/open water boundary was 0.5 feet. Inundated areas were located within the lowest contour of the excavated depressions. Unlike the 2011 monitoring event at this site, which revealed scour holes, sediment deposits, wrack lines, water marks, and other signs of recent inundation, there were no signs of overbank flooding from the Shields River observed within the site in 2012.

Four data points were sampled to determine the wetland/upland boundaries. Data points E-1 and E-2 were located in areas that met the wetland criteria. There were no hydrological indicators observed at E-3 and E-4. Wetland hydrology indicators at E-1, located within a created wetland cell, included sediment deposits, algal mat or crust, surface soil cracks, drainage patterns, geomorphic position, and the FAC-neutral test. The soil profile was moist at 12 inches below the ground surface. Excavation of the soil pit was restricted below 12 inches as a result of a rock layer. Data point E-2 was excavated in a depression located in the southwest portion of the site. Hydrological indicators at E-2 were saturation at 10 inches bgs, sediment deposits, drift deposits, algal mat, water-stained leaves, drainage patterns, geomorphic position, and FAC-Neutral test. Additional hydrological indicators observed in various wetlands at the Easton Ranch site included sparsely vegetated concave surfaces and dry season water table. Site wide saturation and inundation levels were lower in 2012 versus 2011, likely a result of lower regional precipitation rates and the absence of overbank flow from the Shields River.

The 2011 spring runoff levels and duration were high as a result of an above-average snowpack in the mountains and above average spring precipitation. The constructed flood channel through the mitigation site was activated for the first time since construction during the early part of the 2011 growing season. Fluvial geomorphic processes resulted in the initial development of scour holes, riffles, and point bars. Surface water was not flowing in the channel during the

June 2012 site visit. A few isolated pools were observed in the base of the constructed channel. No areas of bank erosion were noted.

3.2. Vegetation

Monitoring year 2012 marked the third year of monitoring on the Easton Ranch wetland mitigation site. One hundred and sixteen plant species have been observed site-wide since 2010 (Table 2). Vegetation plant communities were identified by plant composition and dominance, topography, and hydrology. The community composition is shown on the Monitoring Form in Appendix B and the community boundaries are defined on Figure 3 in Appendix A.

Vegetation community types were named for the dominant species based on percent cover. The only difference in community names from 2011 to 2012 was the elimination of Type 9 – *Beckmannia syzigachne*/Bare Ground, which developed into Type 6. The following community types were observed on the site in 2012 and lists species within each community in descending order of abundance.

Upland community Type 1 – *Phleum pratense/Poa pratensis* was identified on 8.75 acres of higher elevation upland areas that surround the constructed wetland cells and channel (Figure 3, Appendix A). The community was dominated by herbaceous species including common timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), smooth brome, (*Bromus inermis*), caraway (*Carum carvi*), orchard grass (*Dactylis glomerata*), California brome (*Bromus carinatus*), and common dandelion (*Taraxacum officinale*).

Wetland community Type 3 – *Carex* species *(*spp.) encompassed 0.46 acre in the pre-existing emergent wetlands located at the north and south boundaries of the site. The community included a diverse mix of wetland species including Northwest Territory sedge (beaked sedge, *Carex utriculata*), Nebraska sedge (*Carex nebrascensis*), leafy tussock sedge (*Carex aquatilis*), field meadow-foxtail (*Alopecurus pratensis*), fowl mannagrass (*Glyceria striata*), red-tinged bulrush (small-fruited bulrush, *Scirpus microcarpus*), bluejoint reedgrass (*Calamagrostis canadensis*), Canadian thistle (*Cirsium arvense*), and lamp rush (*Juncus effusus*).

Wetland community Type 4 – *Salix drummondiana* was identified in a 0.1-acre area in the northwest corner of the site near the bank of the Shields River. The area encompassed a pre-existing scrub-shrub wetland. Dominant species included Drummond willow (*Salix drummondiana*), western-wheatgrass (*Pascopyrum smithii*, called *Agropryon* on 1988 list), and Nebraska sedge. Other wetland species identified in this community include American sloughgrass (*Beckmannia syzigachne),* bristly black gooseberry (prickly currant, *Ribes lacustre*), red-tinge bulrush, American mannagrass (*Glyceria grandis*), stinging nettle (*Urtica dioica*), clustered field sedge (*Carex praegracilis*), common mint (*Mentha arvensis*), gray willow (*Salix bebbiana*), and Woods' rose (*Rosa woodsii*).

Community Type 5 – *Populus balsamifera* was a pre-existing forested, scrub/shrub wetland located on 0.76 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, gray willow, red tinge bulrush, Pacific willow (*Salix lasiandra*), and blue skullcap (*Scutellaria lateriflora*).

Wetland community Type 6 – *Beckmannia syzigachne* characterized 9.25 acres of the constructed depressions and floodplain channel, an increase of 0.61 acres from 2011. The base elevation of a majority of the depressions in this community contained surface water or signs of recent inundation in 2012. This diverse community type was dominated by American sloughgrass, fowl mannagrass, field meadow foxtail, field horsetail (*Equisetum arvense)*, and lamp rush. Thirty-four other species were identified at five percent or less cover in this community.

Wetland community Type 7 – Aquatic Macrophytes was found in the largest excavated depression and appeared to support semi-permanent open water. Five depressions were identified as Aquatic Macrophytes community across the site and were generally located within the lower half of the site (southern half) where the site appeared to support a higher groundwater table. The community characterized approximately 1.07 acres of the site, an increase of 0.39 acres from 2011. The wetland was classified as an aquatic bed community in 2011, generally defined as a wetland vegetation class dominated by plants "that grow principally on or below the surface of the water for most of the growing season in almost all years (Cowardin et al. 1979)." The Montana Natural Heritage Program (MTNHP) website further defines the Palustrine Aquatic Bed Class as having aquatic plants at greater than 30 percent cover and water depths of greater than 0.5 m (and less than 2 meters) (MTNHP 2011). The dominant species were green algae (protist), water-milfoil (*Myriophyllum sp*.), narrow-leaf water plantain (*Alisma gramineum*), and beaked ditch-grass (*Ruppia maritima*), with lower covers of waterweed (*Elodea sp.)*, American sloughgrass, curly dock, and lamp rush.

Upland community Type 8 – *Bromus* spp./*Trifolium* spp. was identified on 13.12 acres of upland located within the excavated footprint disturbed during initial construction of the site. This community replaced Community Type 2 – *Chenopodium* spp./*Phleum pretense* in 2011 as primary colonizing species decreased dominance and more persistent, perennial plants increased in cover. The vegetation cover increased notably within this community in 2012. There were several hydrophytic species identified at less than 10 percent cover within the plant community. However, the duration of surface water and groundwater in these areas to date does not appear to be sufficient to support further development of wetland plants without additional hydrology, potentially augmented by the existing irrigation network preserved during the development of the mitigation site. The community was dominated by smooth brome,

California brome, common timothy, white clover (*Trifolium repens*), common caraway, Kentucky bluegrass, common dandelion, and American sloughgrass. Note that the indicator status of smooth brome and Kentucky bluegrass was changed from FACU to FAC on the 2012 NWPL.

In general, the site has continued to develop desirable hydrophytic vegetation since initial monitoring in 2010. Community Type 7 – Aquatic Macrophytes, first identified in 2011 on 0.67-acres, continued to develop and increased to 1.07-acres in 2012. The overall percent cover of hydrophytic vegetation in the constructed floodplain continued to increase in 2012, improving soil stability and protection from erosion when the channel is activated during high flows in the Shields River.

Table 2. Vegetation species observed from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Scientific Names	Common Names	WMVC Indicator Status[1]
Achillea millefolium	Common Yarrow	FACU
Agrostis stolonifera	Spreading Bent	FAC
Algae, green	Algae, green	NL
Alisma gramineum	Narrow-Leaf Water-Plantain	OBL
Alnus incana	Speckled Alder	FACW
Alopecurus geniculatus	Marsh Meadow-Foxtail	OBL
Alopecurus pratensis	Field Meadow-Foxtail	FAC
Alyssum alyssoides	**Pale Madwort**	**UPL**
Amaranthus retroflexus	Red-Root	FACU
Avena fatua	**Wild Oat**	**UPL**
Bassia scoparia	**Mexican-Fireweed**	**FAC**
Beckmannia syzigachne	American Slough Grass	OBL
Bromus arvensis	Japanese Brome	UPL
Bromus carinatus	California Brome	UPL
Bromus ciliatus	Fringed Brome	FAC
Bromus inermis	Smooth Brome	FAC
Bromus tectorum	Cheatgrass	UPL
Calamagrostis canadensis	Bluejoint	FACW
Carduus nutans	Nodding Plumeless Thistle	UPL
Carex aquatilis	Leafy Tussock Sedge	OBL
Carex nebrascensis	Nebraska Sedge	OBL
Carex praegracilis	Clustered Field Sedge	FACW
Carex rostrata	Swollen Beaked Sedge	OBL
Carex utriculata	Northwest Territory Sedge	OBL
Carex vesicaria	**Lesser Bladder Sedge**	**OBL**
Carum carvi	Caraway	FACU

[1]Draft 2012 NWPL.
New species identified in 2012 are bolded.

Table 2. (Continued). Vegetation species observed from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Scientific Names	Common Names	WMVC Indicator Status[1]
Cassiope mertensiana	Western Moss-Heather	FACU
Chenopodium album	Lamb's-Quarters	FACU
Chenopodium leptophyllum	Narrow-Leaf Goosefoot	FACU
Cirsium arvense	Canadian Thistle	FAC
Cirsium douglasii	Douglas' Thistle	OBL
Cirsium vulgare	Bull Thistle	FACU
Convolvulus arvensis	Field Bindweed	UPL
Cornus alba	Red Osier	FACW
Cynoglossum officinale	Gypsy-Flower	FACU
Dactylis glomerata	Orchard Grass	FACU
Dasiphora fruticosa	Golden-Hardhack	FAC
Deschampsia cespitosa	Tufted Hairgrass	FACW
Descurainia sophia	Herb Sophia	UPL
Dracocephalum sp.	Dragonhead	NL
Eleocharis palustris	Common Spike-Rush	OBL
Elodea sp.	Waterweed	NL
Elymus repens	Creeping Wild Rye	FAC
Elymus sp.	**Wild Rye**	**NL**
Epilobium ciliatum	Fringed Willowherb	FACW
Equisetum arvense	Field Horsetail	FAC
Equisetum hyemale	Tall Scouring-Rush	FACW
Festuca pratensis	Meadow Fescue	FACU
Galium palustre	**Common Marsh Bedstraw**	**OBL**
Glyceria elata	Tall Manna Grass	FACW
Glyceria grandis	American Manna Grass	OBL
Glyceria striata	Fowl Manna Grass	OBL
Helianthus annuus	Common Sunflower	FACU
Hordeum jubatum	Fox-Tail Barley	FAC
Juncus arcticus	Arctic Rush	FACW
Juncus bufonius	Toad Rush	FACW
Juncus effusus	Lamp Rush	FACW
Juncus ensifolius	Dagger-Leaf Rush	FACW
Juncus nevadensis	Sierran Rush	FACW
Juncus sp.	Rush	NL
Juncus tenuis	Lesser Poverty Rush	FAC
Juncus torreyi	**Torrey's Rush**	**FACW**
Lappula occidentalis	Flatspine stickseed	NL
Larix occidentalis	Western Larch	FACU
Leymus cinereus	Great Basin Lyme Grass	FAC
Lycopus asper	Rough Water-Horehound	OBL
Medicago lupulina	Black Medick	FACU
Medicago sativa	Alfalfa	UPL
Medicago sp.	**Alfalfa**	**NL**
Melilotus officinalis	Yellow Sweet-Clover	FACU
Mentha arvensis	American Wild Mint	FACW
Mimulus guttatus	Seep Monkey-Flower	OBL

[1]Draft 2012 NWPL.
New species identified in 2012 are bolded.

Table 2. (Continued). Vegetation species observed from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Scientific Names	Common Names	WMVC Indicator Status[1]
Myriophyllum sp.	Water-Milfoil	NL
Pascopyrum smithii	Western-Wheat Grass	FACU
Persicaria maculosa	**Lady's-Thumb**	**FACW**
Phalaris arundinacea	Reed Canary Grass	FACW
Phleum pratense	Common Timothy	FAC
Plantago major	Great Plantain	FAC
Poa palustris	**Fowl Blue Grass**	**FAC**
Poa pratensis	Kentucky Blue Grass	FAC
Polypogon monspeliensis	Annual Rabbit's-Foot Grass	FACW
Populus angustifolia	Narrow-Leaf Cottonwood	FACW
Populus balsamifera	Balsam Poplar	FAC
Populus tremuloides	Quaking Aspen	FACU
Potentilla gracilis	Graceful Cinquefoil	FAC
Prunus virginiana	Choke Cherry	FACU
Ranunculus sp.	**Buttercup**	**NL**
Rhamnus alnifolia	Alder-Leaf Buckthorn	FACW
Ribes lacustre	Bristly Black Gooseberry	FAC
Rosa woodsii	Woods' Rose	FACU
Rumex crispus	Curly Dock	FAC
Ruppia maritima	Beaked Ditch-Grass	OBL
Salix 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**
Scirpus microcarpus	Red-Tinge Bulrush	OBL
Scirpus pallidus	Pale Bulrush	OBL
Scutellaria galericulata	Hooded Skullcap	OBL
Scutellaria lateriflora	Mad Dog Skullcap	FACW
Sinapis arvensis	Charlock Mustard	UPL
Sisymbrium altissimum	Tall Hedge-Mustard	FACU
Sisyrinchium idahoense	Idaho Blue-Eyed-Grass	FACW
Stellaria graminea	Grass-Leaf Starwort	FACU
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Penny-Cress	UPL
Tragopogon dubius	**Yellow Salsify**	**UPL**
Trifolium hybridum	Alsike Clover	FAC
Trifolium pratense	Red Clover	FACU
Trifolium repens	White Clover	FAC
Trifolium sp.	Clover	NL
Triglochin maritima	Seaside Arrow-Grass	OBL
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Urtica dioica	Stinging Nettle	FAC
Verbascum thapsus	**Great Mullein**	**FACU**
Vicia americana	**American Purple Vetch**	**FAC**

[1]Draft 2012 NWPL.
New species identified in 2012 are bolded.

Vegetation cover was measured along three transects at the Easton Ranch Mitigation Site in 2012 (Figure 2, Appendix A). The data recorded on Transect 1 (Monitoring Forms, Appendix B) are summarized in tabular and graphical formats in Table 3 and Chart 1 and Chart 2, respectively. The transect ends were photographed (Page C-6 in Appendix C). Transect T-1 extends 1,376 feet (1,072 feet in 2010 due to field error during survey) from south to north across several constructed cells east of the constructed channel. The transect intervals alternated between upland community Types 1 – *Phleum pratense/Poa pratensis* and 8 – *Bromus* spp./*Trifolium* spp. and wetland community Types 6 – *Beckmannia syzigachne* and 7 – Aquatic macrophytes. Hydrophytic vegetation communities comprised 14.7 percent of T-1 in 2012, a slight decrease of 2.3 percent since 2011. There was a transition from Type 9 to Type 6 in 2012 reflecting the development of the wetland vegetation cover on the areas characterized as bare ground in 2011. The field measurement error that occurred during the 2010 survey resulted in the underestimation of approximately 300 feet, likely in the upland Type 2 – *Chenopodium*/*Phleum* community. This precludes direct comparison of trends in habitat due to the adjusted transect length after 2010.

Table 3. Data summary for Transect 1 from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	2010	2011	2012
Transect Length (feet)	**1072**	**1376**	**1376**
Vegetation Community Transitions along Transect	11	11	12
Vegetation Communities along Transect	3	4	4
Hydrophytic Vegetation Communities along Transect	1	2	2
Total Vegetative Species	33	18	34
Total Hydrophytic Species	15	19	20
Total Upland Species	18	19	14
Estimated % Total Vegetative Cover	65	70	80
% Transect Length Comprising Hydrophytic Vegetation Communities	28	17	14.7
% Transect Length Comprising Upland Vegetation Communities	70	83	82.5
% Transect Length Comprising Unvegetated Open Water	2.5	0.0	2.8
% Transect Length Comprising Bare Substrate	0.0	0.0	0.0

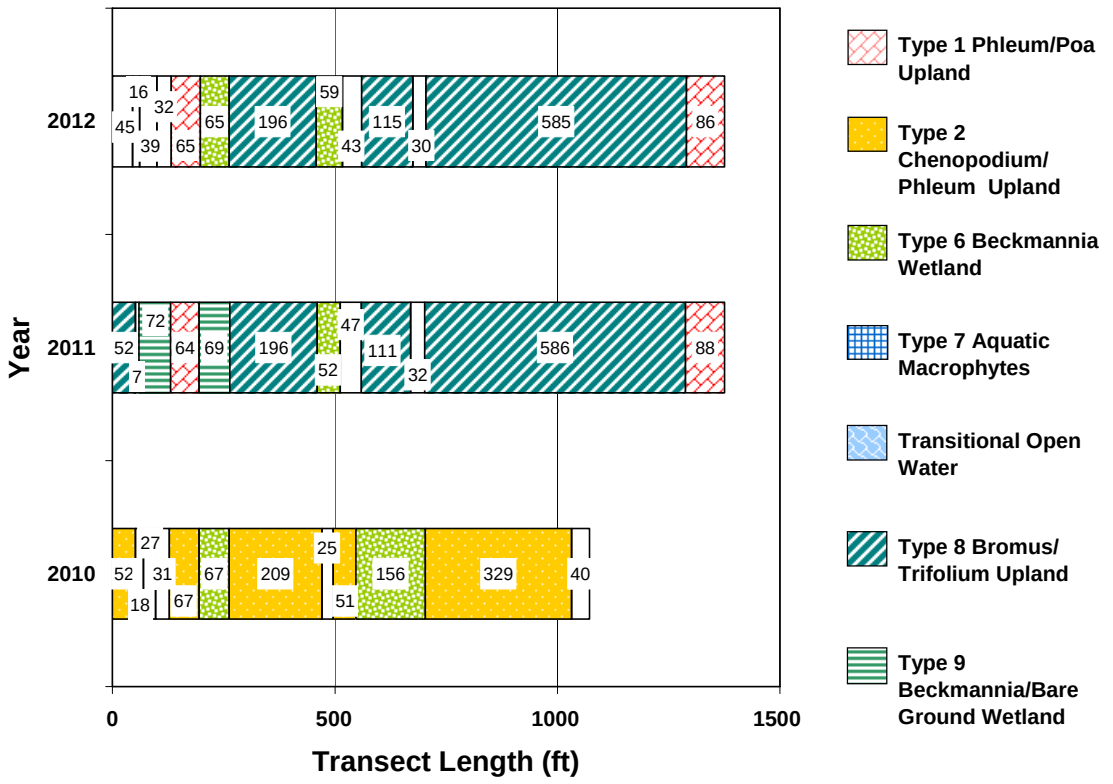


Chart 1. Transect maps showing community types on Transect T-1 from start (0 feet) to finish (1376 feet in 2011 and 2012 and 1072 feet in 2010) at the Easton Ranch Wetland Mitigation Site.

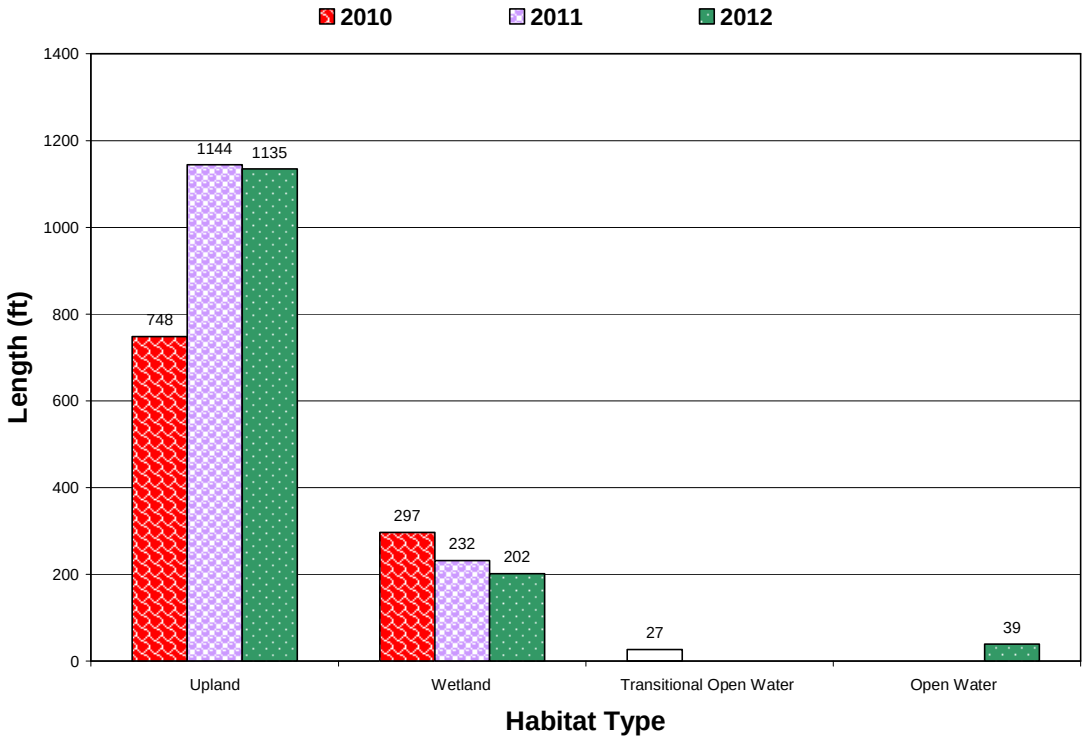


Chart 2. Length of habitat types within Transect T-1 from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Data collected on Transect T-2 (Monitoring Form, Appendix B) are summarized in tabular and graphic formats (Table 4, Charts 3 and 4, respectively). The endpoints of Transect T-2 were photographed (Page C-7 in Appendix C). Wetland types 3 and 6 and upland types 1 and 8 were identified on the transect. Hydrophytic vegetation communities comprised 39.5 percent of T-2 in 2012, a slight decrease from 41 percent in 2011. The largest change occurred on the interval from approximately 200 feet to 400 feet. The plant communities shifted from Type 8 – *Bromus/Trifolium* upland and Type 6 – *Beckmannia* wetland to Type 1 – *Phleum* upland in 2012. An increase of seven hydrophytic species, for a total of 29 species, was documented along T-2 in 2012.

Table 4. Data summary for Transect T-2 from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	**2010**	**2011**	**2012**
Transect Length (feet)	**1333**	**1333**	**1333**
Vegetation Community Transitions along Transect	11	8	7
Vegetation Communities along Transect	4	4	4
Hydrophytic Vegetation Communities along Transect	2	2	2
Total Vegetative Species	35	38	42
Total Hydrophytic Species	17	22	29
Total Upland Species	18	16	13
Estimated % Total Vegetative Cover	65	75	80
% Transect Length Comprising Hydrophytic Vegetation Communities	38.7	41.0	39.5
% Transect Length Comprising Upland Vegetation Communities	61.3	59.0	60.5
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0
% Transect Length Comprising Bare Substrate	0.0	0.0	0.0

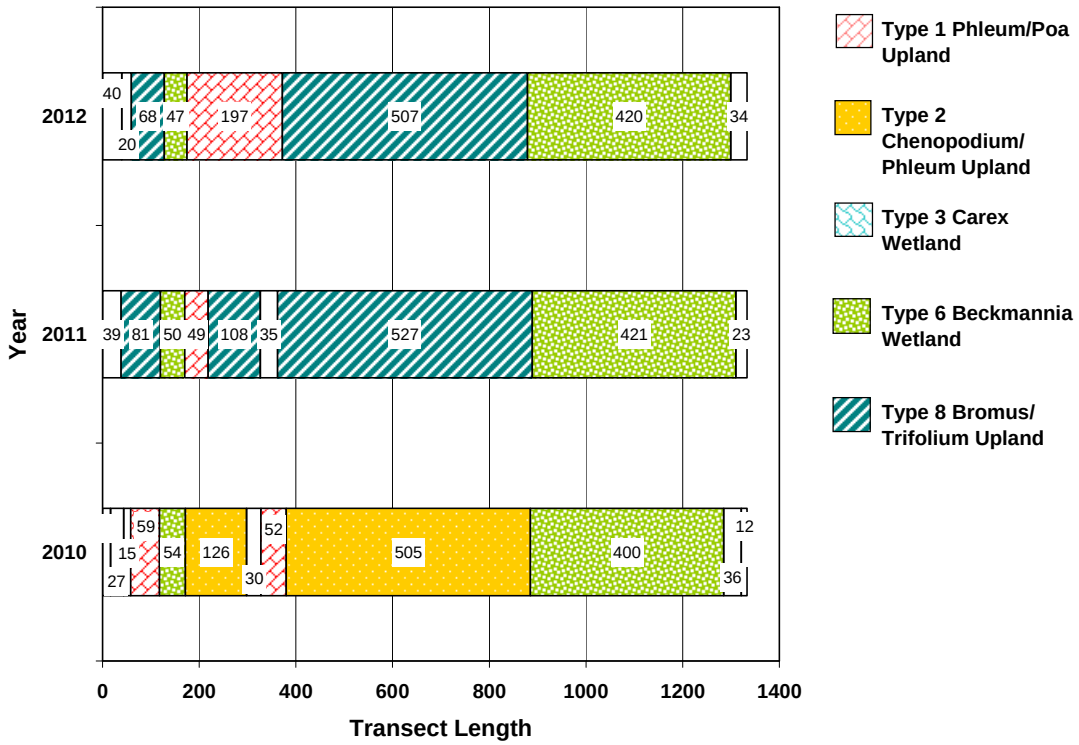


Chart 3. Transect maps showing community types on Transect T-2 from 2010 to 2012 from start (0 feet) to finish (1,333 feet) at the Easton Ranch Wetland Mitigation Site.

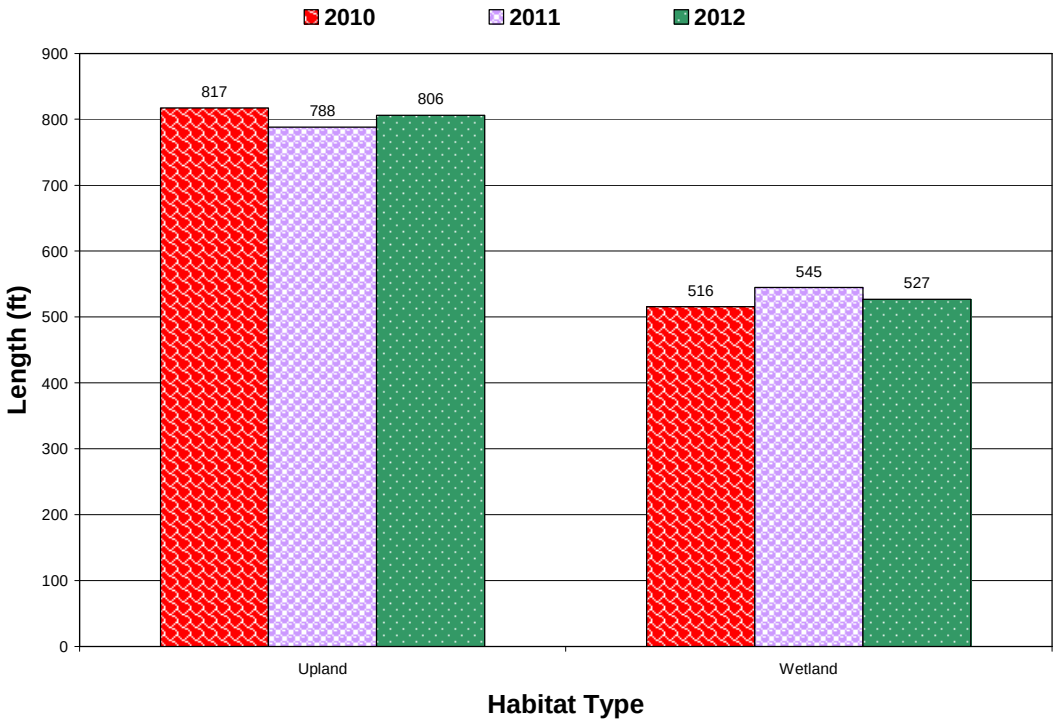


Chart 4. Length of habitat types within Transect T-2 from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Transect T-3 was established west to east across the constructed cells and channel in the south half of the site (Figure 2, Appendix A). Transect T-3 data (Monitoring Form, Appendix B) are summarized in tabular and graphic formats (Table 5 and Charts 5 and 6, respectively). Photographs of the endpoints of Transect T-3 are located on Page C-8 in Appendix C. The transect intervals intercepted wetland community Type 6 and upland community Types 1 and 8. Hydrophytic vegetation comprised 49.1 percent of Transect T-3 in 2012. There were few changes between the transect data collected in 2012 versus 2011 and 2010. The ground elevation is slightly lower in the south half of the site relative to overall groundwater levels and may contribute to the comparatively steady vegetation communities documented along T-3.

Table 5. Data summary for Transect T-3 from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	**2010**	**2011**	**2012**
Transect Length (feet)	**751**	**751**	**751**
Vegetation Community Transitions along Transect	11	9	9
Vegetation Communities along Transect	3	3	3
Hydrophytic Vegetation Communities along Transect	1	1	1
Total Vegetative Species	24	35	33
Total Hydrophytic Species	11	17	20
Total Upland Species	13	18	13
Estimated % Total Vegetative Cover	65	70	80
% Transect Length Comprising Hydrophytic Vegetation Communities	45	50	49.1
% Transect Length Comprising Upland Vegetation Communities	55	50	50.9
% Transect Length Comprising Unvegetated Open Water	0.0	0.0	0.0
% Transect Length Comprising Bare Substrate	0.0	0.0	0.0

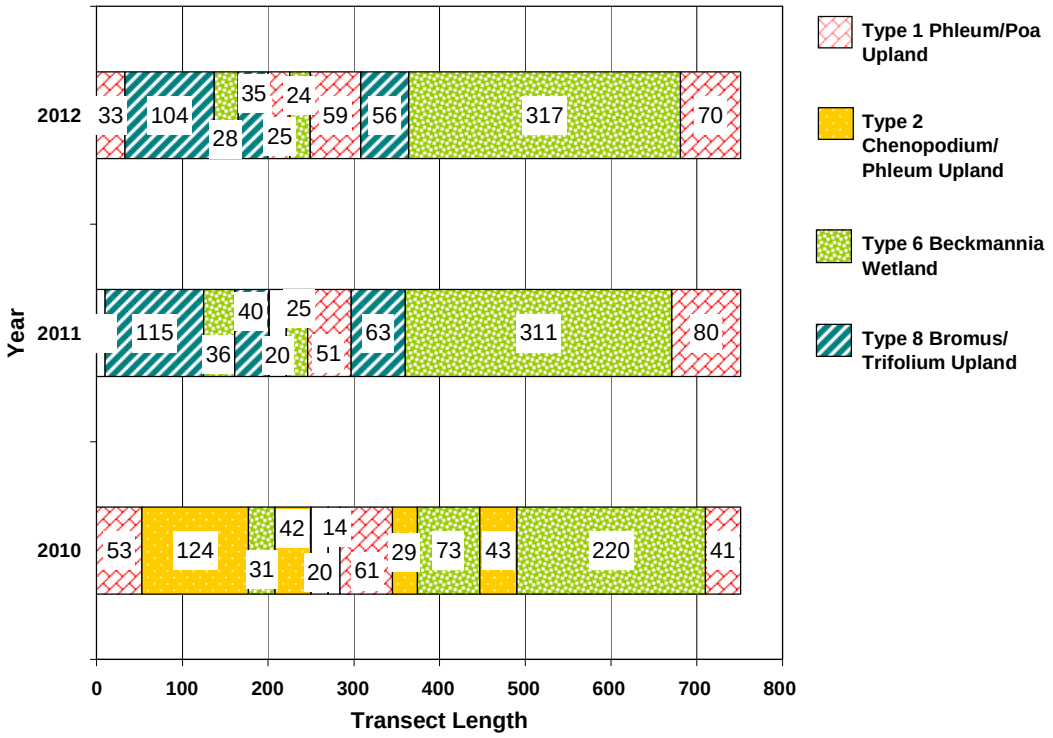


Chart 5. Transect maps showing community types on Transect T-3 from 2010 to 2012 from start (0 feet) to finish (751 feet) at the Easton Ranch Wetland Mitigation Site.

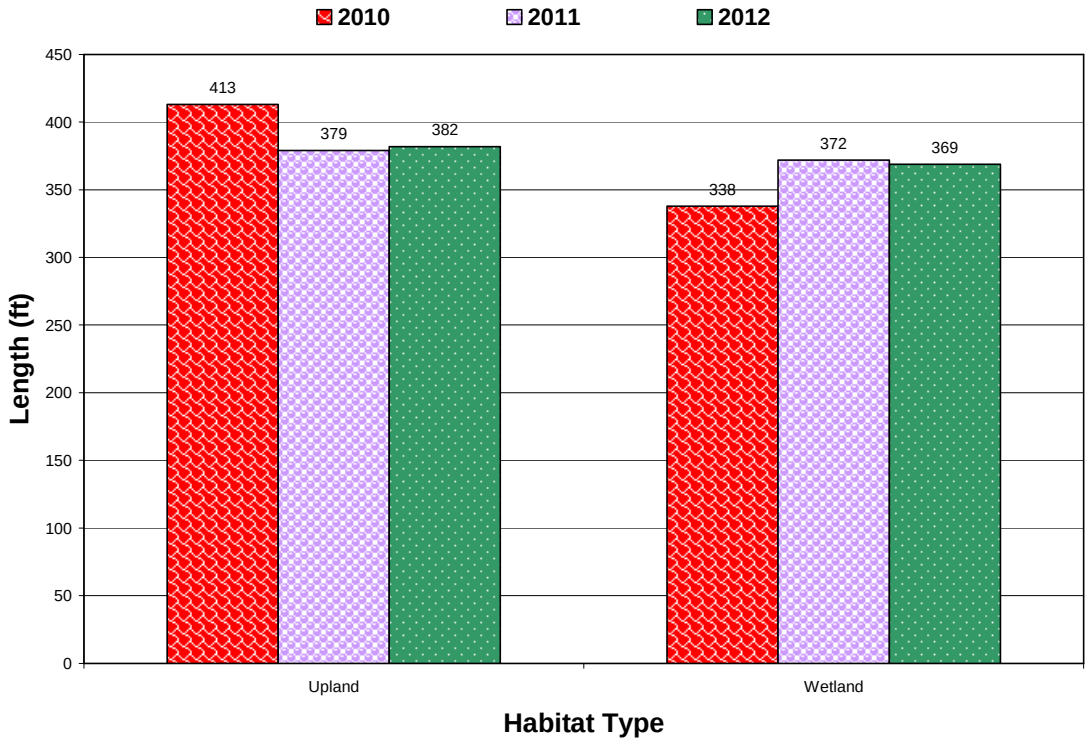


Chart 6. Length of habitat types within Transect T-3 from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Nine infestations of Canadian thistle (*Cirsium arvense*), a Priority 2B noxious weed, were identified primarily around the site perimeter (Figure 3). The Canadian thistle is spreading to the constructed wetland areas. The infestations ranged in area from less than 0.1 acre to between 0.1 and 1.0 acre. The cover classes ranged from trace (less than 1 percent) to low (1 to 5 percent cover). Canadian thistle was observed in communities 1, 3, 5, and 8. Five infestations of houndstongue (*Cynoglossum officinale*) were observed primarily in the north half of the site. The size of the infestations was less than 0.1 acres with less than 1.0 percent cover.

Several hundred cuttings and containerized materials were planted along the constructed flood channel to increase root stability. The plants that were thriving in 2012 exhibited moderate to good vigor. Approximately 10 red-osier dogwood (*Cornus alba* var. *occidentalis*, called *Cornus stolonifera* on 1988 list), 31 sandbar willow, 26 thin-leaf alder, and 40 willow cuttings were identified as surviving.

3.3. Soil

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

Soil test pits were excavated at four locations, all within what was originally mapped as the Meadowcreek series (E-1 through E-4, Figure 2, Appendix A). Data points E-1 and E-2 were located in shallow constructed wetland depressions in Community 6. Data points E-3 and E-4 were located within Community 8 in upland areas excavated in the north half of the site. The soil profile at E-1 revealed a silty clay (10YR 3/2) with redoximorphic concentrations (10YR 3/6) in 10 percent of the matrix. The redox dark surface provided a positive indication of hydric soil. The test pit could not be excavated below 12 inches as a result of a cobble rock layer. The profile at E-2 revealed a clay loam (10YR 2/2) with redoximorphic concentrations (10YR 4/6) within the matrix. The redox dark surface was a hydric soil indicator. The soil color and texture indicated mixing during construction. A rock layer precluded digging below a depth of 10 inches. Data point E-3 exhibited a clay loam (10YR 6/3) with redox concentrations (10YR 4/6) in the matrix. The soil did not meet the hydric criteria. The soil profile at E-4 was a sandy loam (10YR 3/4) with redox concentrations (10YR 4/6) and depletions (10YR 2/2). The soil met the criteria for a depleted matrix. The soil profiles in the test pits did not generally correlate with the map unit as a result of mixing that occurred during construction.

3.4. Wetland Delineation

Four data points were used to refine the wetland boundary (E-1 to E-4, Figure 2, Appendix A and Wetland Determination Data Forms, Appendix B). Data points E-1 and E-2 were located in areas that qualifed as wetlands. Data point E-1 was located in community Type 6 in the southern portion of the site near an excavated depression. Data point E-2 was located near the southern boundary of the site in an excavated swale. Data points E-3 and E-4 were located in the northern part of the site and characterized the upland conditions where the ground surface was lowered during the construction of the mitigation site. The total wetland acreage, including pre-existing wetland, was 11.64 acres in 2011 and 2012 (Table 6). The delineation mapped 1.10 acres of pre-existing emergent and shrub/scrub wetland within the mitigation boundaries in 2012 (Figure 3, Appendix A). The pre-existing wetlands were originally defined during the baseline investigation completed in August 2001 (MDT 2008). The delineated wetland acres include 1.45 acres of the re-established flood channel (Community 6, Figure 3, Appendix A). Uplands account for 21.87 acres of the mitigation site. Water from the irrigation system at the northeast boundary had not been diverted to the site by the June 2012 visit. The frequency and duration of surface water and groundwater does not appear to be sufficient to support a dominance of hydrophytic plants in a majority of the excavated area. However, the density of the vegetation cover in the deeper depressions characterized by Community 6 (wetland) increased in 2012.

Table 6. Total wetland acres delineated from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

Habitat	2001 (acres)	2010 (acres)	2011 (acres)	2012 (acres)
Pre-existing Wetland Area	1.10	1.10	1.10	1.10
Created Wetland Area	---	10.43	10.54	10.54
Total Wetland Habitat	**1.10**	**11.53**	**11.64**	**11.64**

3.5. Wildlife

A comprehensive list of bird and other wildlife species observed directly or indirectly from 2010 to 2012 is presented in Table 7 (Appendix B). Twelve bird species identified in 2012, including three new species: American coot (*Fulicia americana*), band-tailed pigeon (*Patagioenas fasciata*), and black-capped chickadee (*Poecile atricapillus*). The behaviors and habitats of all birds observed in 2012 are listed on the Mitigation Monitoring Form (Appendix B). A deer mouse (*Peromyscus maniulatus*), long-tailed vole (*Microtus longicatus*), pronghorn antelope (*Antilocapra americana*), and white-tailed deer (*Odocoileus virginianus*) were observed for the first time during the 2012 site visit. The tracks, scat, and/or burrows of moose (*Alces americanus*), porcupine (*Hystricomorph hystricidae*), raccoon (*Procyon lotor*), and Richardson's ground squirrel (*Spermophilus richardsonii*) were also noted.

Table 7. Wildlife species observed from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

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

Species identified in 2012 are listed in **bold** type.

Table 7 (continued). Wildlife species observed from 2010 to 2012 at the Easton Ranch Wetland Mitigation Site.

COMMON NAME	SCIENTIFIC NAME
MAMMAL	
Coyote	*Canis latrans*
Deer Mouse	***Peromyscus maniculatus***
Long-tailed Vole	***Microtus longicaudus***
Meadow Vole	*Microtus pennsylvanicus*
Moose	***Alces americanus***
Porcupine	***Erethizon dorsatum***
Pronghorn Antelope	***Antilocapra americana***
Raccoon	***Procyon lotor***
Richardson's Ground Squirrel	***Spermophilus richardsonii***
Striped Skunk	*Mephitis mephitis*
White-footed Mouse	*Peromyscus leucopus*
White-tailed Deer	***Odocoileus virginianus***
REPTILE	
Plains Gartersnake	*Thamnophis radix*

Species identified in 2012 are listed in **bold** type.

3.6. Functional Assessment

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

The Creation AA encompassed 9.09 acres of constructed palustrine, emergent wetland cells and has 52.27 functional units. The overall rating for the Creation AA remained at a Category III wetland in 2012. The general condition of the AA in 2012 went from moderate to low disturbance. The ratings increased for the sediment/shoreline stabilization and sediment/nutrient/toxicant removal functions as a result of the increase in the density of the hydrophytic vegetation cover. The ratings were high for short and long term surface water storage, sediment/nutrient/toxicant removal, and production export/food chain support. The number of units and acreage are expected to increase as some areas of upland in the excavated areas (Community 8) transition to wetland habitat provided sufficient wetland hydrology exists within the site.

The Restoration AA consisted of 1.45-acres of re-established flood channel. The Restoration AA (flood channel) received a Category III rating with 56.5 percent of the total possible points, a slight decrease from 59.5 percent in 2010. This decrease is attributed to the downgrading of the bald eagle from an MTNHP S3 to an S4 species due to a steady increase in populations numbers across the state. The increase from moderate disturbance to low disturbance raised the uniqueness rating. Ratings were high for sediment/nutrient/toxicant removal and moderate for MTNHP species habitat, general wildlife habitat, flood attenuation,

short and long term surface water storage, sediment/shoreline stabilization, production export/food chain support, and groundwater discharge/recharge. The Restoration AA achieved a total of 8.19 functional units in 2012.

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 69.4 percent of the possible points, a decrease from 2011 resulting from the downgrading of the bald eagle by the MTNHP in April 2012 and a decrease of the flood attenuation rating that had been previously overestimated. The presence of emergent, scrub/shrub, and forested wetlands types increased the structural diversity ratings. Ratings were high for general wildlife habitat, flood attenuation, short and long term surface water storage, sediment/nutrient/toxicant removal, and groundwater discharge/recharge and excellent for production export/food chain support. The Preservation AA scored a total of 7.32 functional units is 2012.

3.7. Photo Documentation

Photographs taken at photo points one through seven (PP1 through PP7; Figure 2, Appendix A) from 2010 to 2012 are shown on pages C-1 to C-5 of Appendix C**.** Transect end points are shown on pages C-6 to C-8 of Appendix C. Panoramas of photo points PP-2 to PP-5 are included on pages C-9 to C-11 of Appendix C. Photos of the data points are included on page C-12. Photo points 4A and 4B on pages C-4 and C-5 show the Shields River just outside the northwest corner of the project area from 2010 to 2012.

3.8. Maintenance Needs

The diversion structure was closed during the July 2011 and June 2012 investigations. Six bird-boxes were installed at the site between 2010 and 2011. Several of the bird boxes were occupied by swallows. The fences were intact. No maintenance was required for the structures.

Nine infestations of Canadian thistle (*Cirsium arvense*), a Priority 2B noxious weed, were identified primarily around the site perimeter (Figure 3). The Canadian thistle is spreading to the constructed wetland areas. The infestations ranged in area from less than 0.1 acre to between 0.1 and 1.0 acre. The cover classes ranged from trace (<1 percent) to low (1 to 5 percent cover). Canadian thistle was observed in communities 1, 3, 5, and 8. Five infestations of houndstongue (*Cynoglossum officinale*) were observed primarily in the north half of the site. The size of the infestations was less than 0.1 acres with less than 1.0 percent cover.

Table 8. Functions and Values of the Easton Ranch Wetland Mitigation Site from 2010 to 2012.

Function and Value Parameters from the 2008 MDT Montana Wetland Assessment Method	2010 Creation	2011 Creation	2012 Creation	2010 Restoration	2011 Restoration	2012 Restoration	2010 Preservation	2011 Preservation	2012 Preservation
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.1)	Low (0.1)	Low (0.0)	Low (0.1)	Low (0.1)	Low (0.0)	Low (0.1)	Low (0.1)
MTNHP Species Habitat	Mod (0.6)	Mod (0.6)	Low (0.2)	Mod (0.6)	Mod (0.6)	Low (0.2)	Mod (0.6)	Mod (0.6)	Low (0.2)
General Wildlife Habitat	Mod (0.5)	Mod (0.7)	Mod (0.7)	Low (0.3)	Mod (0.7)	Mod (0.7)	High (0.9)	High (0.9)	High (0.9)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flood Attenuation	Mod (0.6)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.6)	Mod (0.6)	Exc (1.0)	High (0.9)	Mod (0.6)
Short and Long Term Surface Water Storage	High (0.9)	High (0.8)	High (0.8)	Mod (0.6)	Mod (0.6)	Mod (0.6)	High (0.8)	High (0.8)	High (0.8)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	Mod (0.7)	High (0.9)	Mod (0.6)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	Low (0.2)	Low (0.2)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	NA	NA	NA
Production Export/ Food Chain Support	Mod (0.5)	High (0.8)	High (0.8)	Mod (0.5)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Exc (1.0)	Exc (1.0)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	Mod (0.7)	High (1.0)	Mod (0.7)	Mod (0.7)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.2)	Low (0.3)	Mod (0.4)	Low (0.2)	Low (0.3)	Mod (0.4)	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)	Low (0.05)	Low (0.05)
Actual Points / Possible Points	**5.25 / 10**	**5.75 / 10**	**5.75 / 10**	**4.95 / 10**	**5.95 / 10**	**5.65 / 10**	**6.65 / 9**	**6.95 / 9**	**6.25 / 9**
% of Possible Score Achieved	**52.5%**	**57.5%**	**57.5%**	**49.5%**	**59.5%**	**56.5%**	**73.9%**	**77.2%**	**69.4%**
Overall Category	**III**	**III**	**III**	**III**	**III**	**III**	**II**	**II**	**II**
Acreage of Assessed Aquatic Habitats within Easement	**8.98**	**9.09**	**9.09**	**1.45**	**1.45**	**1.45**	**1.1**	**1.1**	**1.1**
Functional Units (acreage x actual points)	**47.15**	**52.27**	**52.27**	**7.18**	**8.63**	**8.19**	**7.32**	**7.65**	**6.88**

The east bank of the Shields River along the northwest corner of the Easton mitigation site remained stable through the 2011 runoff event. The structural integrity of the coir-wrapped soil lifts was intact following high flows. Fine-grain deposits accumulated on the lifts as flood waters receded. The 2011 flood flows resulted in the formation of a wider base-flow channel and a slight westward shift of the west bank, away from the site. A debris jam was removed from the channel and several downed trees were removed from the riparian cottonwood forest during the early part of 2012. Photo points 4A and 4B on pages C-2 and C-3 show the Shields River in the northwest corner of the site from 2010 to 2012.

3.9. Current Credit Summary

Table 9 summarizes the current wetland credits based on the USACE approved credit ratios (MDT 2008) and the wetland delineation completed in June 2012. Proposed mitigation included the creation of 24.95 acres of palustrine, emergent and shrub/scrub wetlands, the re-establishment of a 1.56-acre flood channel, the preservation of 1.10 acres of pre-existing wetland, and the maintenance of 6.43 acres of upland buffer. Proposed wetland credits for the project site totaled 27.40 credit acres, which accounted for 0.67 acres of impacts associated with the construction of the mitigation wetland.

The 2012 delineation identified a total of 11.64 acres of wetland within the project boundary. Approximately 9.09 acres of emergent wetland has developed to date within the constructed cells. The restored channel encompassed 1.45 acres of riverine emergent wetland. The pre-existing wetland, which included portions of Communities 3, 4, and 7, encompassed 1.1 acres. Uplands accounted for 21.87 acres of the 33.51 acre site. The current 50 foot upland buffer calculated for this site totals 11.97 acres. Since this value is expected to decrease with continued wetland development, the expected 50 foot upland buffer at full wetland development (6.43 acres) was used to calculate credit totals. Applying the approved USACE Mitigation ratios to each mitigation feature, a total of 11.44 acres of credit was accrued in 2012 (Table 9).

While a majority of the site was inundated or saturated within 12 inches of the ground surface in July 2011, a decrease in surface water and groundwater levels at the site was observed in 2012. Several of the excavated depressions that contained surface water in 2011 were dry in 2012, limiting the potential of the site to expand in wetland acreage (see photo sheets).

The Easton Ranch wetland mitigation site has shown continued progress towards achieving the USACE-approved performance standards established for this project. The scrub/shrub wetland habitat established by cuttings, containerized plants, and volunteer species is still developing. Approximately 197 live woody stems were observed in 2012. The stems have not yet achieved enough growth to allow quantification of the absolute cover site wide. The herbaceous cover of hydrophytic vegetation in a majority of Community 6 is approximately 80 to 90 percent. The percent cover of bare ground decreased

notably from 2010 to 2011. However, the vegetation cover in Community 8, which encompasses 13.12 acres of the excavated areas targeted for wetland development, was still dominated by upland plants. The vegetation cover in the channel increased in 2012, although the channel was not active during the 2012 runoff. The cross-section was stable and included dominant plants species (rush and willow) with high root stability indices. Weed management is ongoing. Canadian thistle infestations were sprayed in 2011. The weeds do not currently exceed 10 percent of cover in the upland buffer. The development of wetland habitat appears limited by the lack of wetland hydrology at the higher ground surface elevations in the excavated areas. As a result of these conditions, the wetland acreage development goals have not yet been achieved at this site. The fencing around the site was intact and in good condition and grazing has been excluded from the mitigation area.

Table 9. Summary of wetland credits at the Easton Ranch Wetland Mitigation Site from 2010 to 2012.

Proposed Mitigation Features	Compensatory Mitigation Type	USACE Mitigation Ratios	Final Credit Acreages	Proposed Final Wetland Credits (Acres)	2010 Wetland Acreages	2010 Credit Acres	2011 Wetland Acreages	2011 Credit Acres	2012 Wetland Acreages	2012 Credit Acres
Creation of palustrine emergent wetland via shallow excavation.	Creation	1:1	24.95	24.95	7.78	7.78	9.09	9.09	9.09	9.09
Re-establishment of relic flood channel.	Restoration (Re-establishment)	1:1	1.56	1.56	1.45	1.45	1.45	1.45	1.45	1.45
Preservation of existing shrub/scrub and palustrine emergent wetland.	Preservation	4:1	1.10	0.28	1.10	0.28	1.10	0.28	1.10	0.28
Establish a 50-foot wide upland buffer.	Upland Buffer	5:1	6.43	1.29	6.43*	1.29	6.43*	1.29	6.43*	1.29
Project Impacts			-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**

*The current upland buffer calculated to be 11.97ac and is expected to decrease as wetland areas expand within mitigation boundary. Value presented in this table (6.43ac) represents the expected extent of upland buffer once maximum wetland acreage is achieved.

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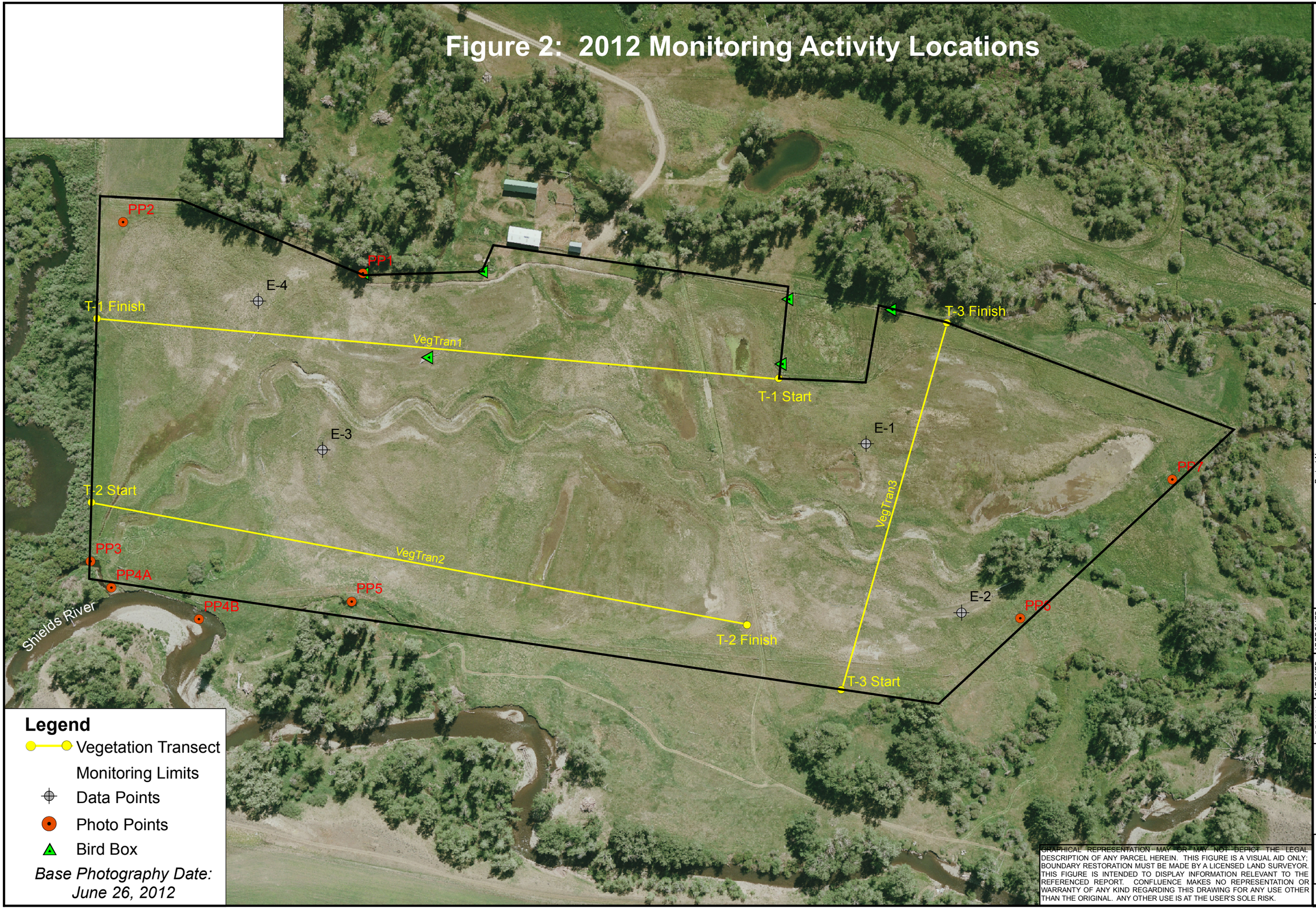
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Appendix A

Project Area Maps – Figures 2 and 3

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

Figure 2: 2012 Monitoring Activity Locations



Legend

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

Base Photography Date: June 26, 2012

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

LOCATION: Park Co., MT

PROJECT NO: NH-STPP 5(39)

FILE: Easton/Monitor2012.mxd

Project Name: Easton Ranch Wetland Mitigation

Drawing Title: 2012 Monitoring Activity Locations

DRAWN BCS | CHECKED BV | APPROVED JJ

SCALE: Noted

Drawn: September 6, 2012

PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 2

REV -

Figure 3: 2012 Mapped Site Features

N

0 125 250 500

Feet

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

Vegetation Community Types
1. Phleum pratense/Poa pratensis
3. Carex spp.
4. Salix drummondiana
5. Populus balsamifera
6. Beckmannia syzigachne
7. Aquatic Macrophytes
8. Bromus spp./Trifolium spp.

Legend
- Monitoring Limits
- Wetland Limits
- Vegetation Communities

Base Photography Date: June 26, 2012

Acreages

Project Area	33.51 acres
Gross Wetland	11.64 acres
Pre-existing Wetland	1.10 acres
Net Wetlands	10.54 acres
Uplands	21.87 acres

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

LOCATION: Park Co., MT

PROJECT NO: STPX-0034(14)

FILE: Easton/Veg2012.mxd

Project Name
EASTON RANCH
WETLAND MITIGATION
Drawing Title
2012 MAPPED SITE FEATURES

DRAWN	CHECKED	APPROVED
BCS	BV	JJ

SCALE: Noted

Drawn: September 6, 2012

PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

REV -

Appendix B

2012 MDT Wetland Mitigation Site Monitoring Form
2012 USACE Wetland Determination Data Form
2012 MDT Montana Wetland Assessment Form

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Easton Ranch Assessment Date/Time 6/26/2012 7:45:47 AM

Person(s) conducting the assessment: B Sandefur

Weather: Warm, windy, sunny w/ mild temp Location: Easton Ranch Mitigation Site

MDT District: Butte Milepost: NA

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

Initial Evaluation Date: 8/25/2010 Monitoring Year: 3 #Visits in Year: 1

Size of Evaluation Area: 34 (acres)

Land use surrounding wetland:

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

HYDROLOGY

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

Inundation: ☑ Average Depth: 0.2 **(ft)** Range of Depths: 0-1.5 **(ft)**

Percent of assessment area under inundation: 5 %

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

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

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

Drift & sediment deposits from previous year, water-stained leaves, soil cracks, algal crust, sparsely vegetated concave surfaces, drainage patterns, dry-season water table, geomorphic position, FAC-neutral..

Groundwater Monitoring Wells

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

Well ID	Water Surface Depth (ft)
No Wells	

Additional Activities Checklist:

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

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

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

Hydrology Notes:

All areas of inundation within excavated depressions within created wetland AA. No signs of overbank flooding in 2012. No irrigation water had been turned into the site as of field visit.

VEGETATION COMMUNITIES

Site Easton Ranch

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

* Indicates accepted spp name not on '88 list.

Community # 1 **Community Type:** Phleum pratense / Poa pratensis **Acres:** 8.75

Species	Cover class	Species	Cover class
Alopecurus pratensis	1	Alyssum alyssoides	1
Bassia scoparia	1	Bromus carinatus	3
Bromus inermis	4	Carum carvi	4
Cirsium arvense	1	Cynoglossum officinale	0
Dactylis glomerata	4	Elymus cinereus	0
Elymus sp.	0	Equisetum arvense	0
Equisetum hyemale	0	Festuca pratensis	1
Medicago sativa	1	Pascopyrum smithii	1
Phleum pratense	4	Plantago major	0
Poa pratensis	4	Populus tremuloides	0
Potentilla gracilis	0	Ranunculus sp.	0
Sisymbrium altissimum	0	Taraxacum officinale	3
Thlaspi arvense	2	Trifolium pratense	1
Trifolium repens	1		

Comments:

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

Species	Cover class	Species	Cover class
Alopecurus pratensis	4	Calamagrostis canadensis	1
Carex aquatilis	1	Carex nebrascensis	3
Carex utriculata	4	Cirsium arvense	1
Glyceria striata	2	Juncus effusus	1
Persicaria maculosa	0	Salix exigua	0
Scirpus microcarpus	2		

Comments:

Community # 4 **Community Type:** Salix drummondiana / **Acres:** 0.1

Species	Cover class	Species	Cover class
Beckmannia syzigachne	2	Carex nebrascensis	3
Carex praegracilis	1	Cirsium douglasii	0
Dactylis glomerata	2	Glyceria grandis	2
Mentha arvensis	1	Pascopyrum smithii	4
Phleum pratense	1	Poa pratensis	1
Ribes lacustre	2	Rosa woodsii	1
Salix bebbiana	1	Salix drummondiana	4
Scirpus microcarpus	2	Urtica dioica	2

Comments:

Community # 5 **Community Type:** Populus balsamifera / **Acres:** 0.76

Species	Cover class	Species	Cover class
Bromus inermis	3	Cirsium arvense	1
Galium palustre	1	Glyceria striata	3
Populus angustifolia	4	Populus balsamifera	4
Salix bebbiana	2	Salix lasiandra	2
Scirpus microcarpus	2	Scutellaria lateriflora	2
Urtica dioica	0		

Comments:

Community # 6 **Community Type:** Beckmannia syzigachne / **Acres:** 9.25

Species	Cover class	Species	Cover class
Algae, green	0	Alisma gramineum	1
Alnus incana	0	Alopecurus pratensis	2
Beckmannia syzigachne	3	Brassica kaber	1
Bromus carinatus	0	Carex aquatilis	0
Carex utriculata	0	Carex vesicaria	1
Carum carvi	1	Cynoglossum officinale	0
Equisetum arvense	2	Festuca pratensis	0
Glyceria grandis	1	Glyceria striata	3
Juncus arcticus	1	Juncus bufonius	0
Juncus effusus	2	Juncus ensifolius	0
Juncus torreyi	0	Medicago sp.	1
Mentha arvensis	0	Mimulus guttatus	0
Phleum pratense	1	Plantago major	1
Poa palustris	1	Ranunculus sp.	0
Rumex crispus	1	Salix bebbiana	0
Salix exigua	0	Salix lutea	0
Scutellaria lateriflora	0	Taraxacum officinale	1
Thlaspi arvense	0	Trifolium pratense	1
Trifolium repens	1	Typha latifolia	0
Vicia americana	0		

Comments:

Community # 7 **Community Type:** Aquatic macrophytes / **Acres:** 1.07

Species	Cover class	Species	Cover class
Algae, green	4	Alisma gramineum	2
Beckmannia syzigachne	1	Elodea sp.	1
Juncus effusus	0	Myriophyllum sp.	3
Rumex crispus	1	Ruppia maritima	2

Comments:

Community # 8 **Community Type:** Bromus spp. / Trifolium spp. **Acres:** 13.12

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agrostis stolonifera	1
Alisma gramineum	0	Alopecurus pratensis	0
Alyssum alyssoides	0	Avena fatua	0
Bassia scoparia	0	Beckmannia syzigachne	2
Brassica kaber	0	Bromus carinatus	3
Bromus inermis	3	Carduus nutans	0
Carum carvi	2	Chenopodium album	0
Cirsium arvense	0	Cynoglossum officinale	0
Dactylis glomerata	0	Deschampsia cespitosa	0
Equisetum arvense	0	Equisetum hyemale	0
Festuca pratensis	1	Glyceria elata	1
Glyceria striata	0	Juncus effusus	0
Juncus tenuis	0	Medicago sativa	1
Mentha arvensis	0	Pascopyrum smithii	0
Phleum pratense	3	Plantago major	1
Poa pratensis	2	Potentilla gracilis	0
Ranunculus sp.	0	Rumex crispus	1
Scutellaria lateriflora	0	Sisymbrium altissimum	0
Taraxacum officinale	2	Thlaspi arvense	0
Tragopogon dubius	0	Trifolium pratense	0
Trifolium repens	3	Verbascum thapsus	0
Vicia americana	0		

Comments:

Total Vegetation Community Acreage **33.51**

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

VEGETATION TRANSECTS

Site: Easton Ranch Date: 6/26/2012 7:45:47 AM

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

Interval Data:

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

Species	Cover class	Species	Cover class
Bromus inermis	4	Cirsium arvense	2
Festuca pratensis	4	Phleum pratense	2
Plantago major	0	Poa pratensis	3
Ranunculus sp.	1	Trifolium pratense	2

Ending Station 61 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	4	Carex utriculata	1
Juncus arcticus	2	Juncus effusus	3
Juncus ensifolius	1		

Ending Station 100 **Community Type:** Aquatic macrophytes /

Species	Cover class	Species	Cover class
Algae, green	5	Alisma gramineum	1
Beckmannia syzigachne	3	Juncus effusus	1
Rumex crispus	1		

Ending Station 132 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	4	Glyceria striata	2
Juncus effusus	4	Trifolium pratense	3

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

Species	Cover class	Species	Cover class
Carum carvi	4	Phleum pratense	5
Poa pratensis	2	Taraxacum officinale	3

Ending Station 262 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Algae, green	3	Alisma gramineum	2
Alopecurus pratensis	2	Beckmannia syzigachne	5
Glyceria grandis	3	Juncus effusus	2
Ranunculus sp.	1	Typha latifolia	1

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

Species	Cover class	Species	Cover class
Alopecurus pratensis	1	Avena fatua	0
Bromus carinatus	2	Bromus inermis	2
Carum carvi	2	Cirsium arvense	0
Glyceria striata	1	Medicago sativa	2
Phleum pratense	4	Plantago major	1
Rumex crispus	0	Taraxacum officinale	2
Tragopogon dubius	0	Trifolium pratense	3
Trifolium repens	1		

Ending Station 517 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alopecurus pratensis	2	Beckmannia syzigachne	4
Glyceria striata	4	Juncus arcticus	3
Mentha arvensis	1	Trifolium pratense	4

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

Species	Cover class	Species	Cover class
Alopecurus pratensis	3	Bromus carinatus	2
Carum carvi	2	Cirsium arvense	0
Medicago sativa	2	Phleum pratense	3
Poa pratensis	2	Taraxacum officinale	2
Trifolium pratense	2		

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

Species	Cover class	Species	Cover class
Bromus carinatus	3	Bromus inermis	2
Carum carvi	2	Cynoglossum officinale	0
Juncus effusus	1	Medicago sativa	2
Mentha arvensis	1	Phleum pratense	3
Plantago major	1	Poa pratensis	2
Potentilla gracilis	1	Trifolium pratense	2
Trifolium repens	2		

Ending Station 705 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	3	Glyceria striata	2
Juncus arcticus	2	Juncus effusus	1
Rumex crispus	1	Taraxacum officinale	1

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

Species	Cover class	Species	Cover class
Bassia scoparia	1	Brassica kaber	1
Bromus carinatus	3	Carum carvi	2
Cirsium arvense	0	Cynoglossum officinale	0
Festuca pratensis	2	Medicago sativa	2
Pascopyrum smithii	0	Phleum pratense	4
Taraxacum officinale	1	Trifolium pratense	2

Ending Station 1376 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus inermis	2	Carum carvi	1
Cirsium arvense	0	Dactylis glomerata	2
Festuca pratensis	1	Medicago sativa	1
Phleum pratense	5	Poa pratensis	3
Populus tremuloides	1	Taraxacum officinale	2
Trifolium pratense	1		

Transect Notes:

Transect Number: 2 **Compass Direction from Start:** 180

Interval Data:

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

Species	Cover class	Species	Cover class
Alopecurus pratensis	3	Carex aquatilis	2
Carex nebrascensis	3	Carex utriculata	4
Glyceria striata	2	Juncus effusus	2
Persicaria maculosa	0	Salix exigua	1
Scirpus microcarpus	3		

Ending Station 60 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Algae, green	1	Alisma gramineum	1
Alopecurus pratensis	2	Beckmannia syzigachne	4
Carex aquatilis	0	Carex utriculata	1
Glyceria striata	3	Juncus ensifolius	1
Ranunculus sp.	0	Salix lutea	0
Taraxacum officinale	1		

Ending Station 128 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Bromus carinatus	1
Bromus inermis	3	Carum carvi	1
Medicago sativa	1	Phleum pratense	3
Taraxacum officinale	2	Trifolium pratense	3
Trifolium repens	2		

Ending Station 175 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alisma gramineum	1	Alnus incana	0
Glyceria striata	3	Juncus effusus	2
Juncus ensifolius	0	Ranunculus sp.	1
Salix lutea	0	Trifolium pratense	2

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

Species	Cover class	Species	Cover class
Bromus inermis	2	Carum carvi	2
Cirsium arvense	0	Equisetum arvense	0
Festuca pratensis	1	Medicago sativa	1
Phleum pratense	4	Plantago major	1
Poa pratensis	4	Potentilla gracilis	1
Ranunculus sp.	0	Sisymbrium altissimum	0
Taraxacum officinale	2	Trifolium repens	1

Ending Station 879 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Alyssum alyssoides	0	Brassica kaber	0
Bromus carinatus	3	Bromus inermis	3
Carum carvi	1	Cirsium arvense	0
Taraxacum officinale	2	Thlaspi arvense	0
Trifolium pratense	3	Trifolium repens	1
Verbascum thapsus	0	Vicia americana	0

Ending Station 1299 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alisma gramineum	0	Alopecurus pratensis	2
Beckmannia syzigachne	4	Brassica kaber	1
Carex utriculata	0	Carum carvi	1
Glyceria striata	2	Juncus arcticus	2
Juncus effusus	2	Medicago sp.	1
Plantago major	1	Poa palustris	2
Rumex crispus	1	Salix bebbiana	0
Salix exigua	0	Thlaspi arvense	1
Trifolium pratense	1	Trifolium repens	1
Typha latifolia	0		

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

Species	Cover class	Species	Cover class
Alyssum alyssoides	1	Bromus carinatus	1
Bromus inermis	3	Carum carvi	1
Equisetum arvense	0	Festuca pratensis	3
Phleum pratense	3	Plantago major	1
Poa pratensis	2	Thlaspi arvense	2

Transect Notes:

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

Interval Data:

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

Species	Cover class	Species	Cover class
Alyssum alyssoides	1	Bassia scoparia	1
Bromus carinatus	2	Bromus inermis	3
Carum carvi	1	Cynoglossum officinale	0
Elymus cinereus	0	Equisetum hyemale	
Pascopyrum smithii	1	Phleum pratense	2
Poa pratensis	2		

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

Species	Cover class	Species	Cover class
Bassia scoparia	1	Brassica kaber	1
Bromus carinatus	2	Bromus inermis	3
Carum carvi	1	Cirsium arvense	0
Cynoglossum officinale	0	Dactylis glomerata	2
Equisetum arvense	1	Medicago sativa	1
Phleum pratense	2	Sisymbrium altissimum	1
Trifolium pratense	2	Trifolium repens	1

Ending Station 165 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alopecurus pratensis	2	Beckmannia syzigachne	2
Carum carvi	2	Festuca pratensis	2
Glyceria striata	2	Juncus arcticus	2
Juncus effusus	2	Medicago sativa	2
Taraxacum officinale	2	Trifolium pratense	2

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

Species	Cover class	Species	Cover class
Bromus carinatus	3	Carum carvi	2
Medicago sativa	2	Phleum pratense	2
Sisymbrium altissimum	2	Thlaspi arvense	1
Trifolium pratense	3	Trifolium repens	3

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

Species	Cover class	Species	Cover class
Alyssum alyssoides	1	Bromus carinatus	2
Carum carvi	2	Cirsium arvense	0
Elymus sp.	2	Phleum pratense	3
Poa pratensis	2	Sisymbrium altissimum	2
Thlaspi arvense	2		

Ending Station 249 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alopecurus pratensis	2	Beckmannia syzigachne	3
Bromus carinatus	3	Carum carvi	2
Equisetum arvense	2	Glyceria striata	2
Taraxacum officinale	1	Thlaspi arvense	1

Ending Station 308 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Alyssum alyssoides	1	Bromus carinatus	2
Bromus inermis	1	Carum carvi	2
Festuca pratensis	1	Phleum pratense	5
Poa pratensis	2	Sisymbrium altissimum	2
Thlaspi arvense	1	Trifolium pratense	2
Trifolium repens	2		

Ending Station 364 **Community Type:** Bromus spp. / Trifolium spp.

Species	Cover class	Species	Cover class
Brassica kaber	2	Bromus carinatus	2
Bromus inermis	2	Carum carvi	2
Medicago sativa	2	Plantago major	1
Trifolium pratense	3		

Ending Station 681 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alopecurus pratensis	2	Brassica kaber	1
Carex utriculata	0	Glyceria striata	2
Juncus arcticus	2	Juncus effusus	2
Juncus ensifolius	0	Juncus torreyi	0
Mentha arvensis	1	Rumex crispus	1
Trifolium pratense	2	Vicia americana	0

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

Species	Cover class	Species	Cover class
Bromus carinatus	2	Bromus inermis	2
Carum carvi	2	Equisetum hyemale	1
Phleum pratense	5	Plantago major	2
Poa pratensis	3	Taraxacum officinale	2

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Easton Ranch

Planting Type	#Planted	#Alive	Notes
Red-osier dogwood	250	10	Moderate vigor for observed surviving plants
Sandbar willow	250	31	Good vigor on surviving plants
Thinleaf alder	500	26	Establishing plants along reconstructed flood channel
Willow cuttings	200	40	Moderate survival for observed cuttings

Comments

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

Easton Ranch

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: Bird Boxes

How many? 6

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Coot	1	FO	AB, OW
American Goldfinch	1	F	UP
American Robin	3	F, N	FO, SS, UP, WM
Bald Eagle	1	F, FO	UP
Band-tailed Pigeon	2	FO	UP
Black-billed Magpie	2	FO	UP, WM
Black-capped Chickadee	2	F, L	SS, UP, WM
Canada Goose	2	FO	OW, UP, WM
Mallard	2	FO, L	AB, OW, UP, WM
Red-tailed Hawk	1	F, FO	UP, WM
Song Sparrow	1	L	UP, WM
Tree Swallow	11	BP, F, N	FO, OW, WM

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Deer Mouse	1	No	No	No	
Long-tailed Vole	1	No	No	No	
Moose		Yes	Yes	No	
Porcupine		Yes	No	No	
Pronghorn	3	No	No	No	
Raccoon		Yes	No	No	
Richardson's Ground Squirrel		No	No	Yes	
White-tailed Deer	7	Yes	No	No	

Wildlife Comments:

Easton Ranch

PHOTOGRAPHS

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

Photograph Checklist:

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

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

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

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

Photo #	Latitude	Longitude	Bearing	Description
9198	46.057407	-110.63842		Veg tran 1, start
9203	46.061272	-110.63797		Veg tran 1, end
9205	46.06102	-110.637299		PP-2
9209	46.061264	-110.639793		PP-3
9210	46.061035	-110.640099		PP-4a
9212	46.060459	-110.640327		PP-4b
9213	46.059715	-110.640213		PP-5
9225	46.061146	-110.639359		Veg tran 2, start
9228	46.057518	-110.64032		Veg tran 2, end
9229	46.057083	-110.640732		Veg tran 3, start
9231	46.056564	-110.637939		Veg tran 3, end
9233	46.056941666667	-110.6389916667		E-1
9236-9241	46.055264	-110.639107		PP-7
9244-49	46.056175	-110.64048		PP-6
9250	46.056395	-110.640305		E-2
9252	46.059985	-110.639175		E-3
9253	46.06077	-110.6374716667		E-4
9258-63	46.059555	-110.637718		PP-1

Comments:

Easton Ranch

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

Functional Assessments

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

Functional Assessment Comments:

Maintenance

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

If yes, do they need to be repaired? No

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

Were man-made structures built or installed to impound water or control water flow into or out of the wetland? Yes

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

If yes, describe the problems below.

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

Project/Site: Easton Ranch | City/County: Park | Sampling Date: 6/26/2012

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

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

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

Subregion (LRR): LRR E | Lat: 46.0569416666667 | Long: -110.638991666667 | Datum: WGS84

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

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

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

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

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

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

Remarks:
DP in veg com 6.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Glyceria striata	65	☑	OBL
2. Juncus arcticus	15	☐	FACW
3. Beckmannia syzigachne	25	☑	OBL
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	105 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	105 (A)		120 (B)

Prevalence Index = B/A = 1.14286

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic 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:

SOIL

Sampling Point: E-1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	95	10YR 3/6	5	C	M	Silt Loam	
6-12	10YR 3/2	85	10YR 3/6	10	C	M	Silty Clay	also w/ ~5% 10YR 6/1

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

Very rocky below 12in.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

Soils moist & 12in, could not excavate deep enough to find saturation level due to rocky soils. Open water ~20ft away, water table appeared to be ~2ft below surface @ pit.

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

Project/Site: Easton Ranch | City/County: Park | Sampling Date: 6/26/2012

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

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

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

Subregion (LRR): LRR E | Lat: 46.056395 | Long: -110.640305 | Datum: WGS84

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

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

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

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

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

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

Remarks:
DP in swale in veg com 6.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Beckmannia syzigachne	40	☑	OBL
2. Glyceria grandis	15	☑	OBL
3. Poa palustris	10	☐	FAC
4. Alisma gramineum	5	☐	OBL
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	70 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 30

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: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	70 (A)		90 (B)

Prevalence Index = B/A = 1.28571

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic 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:

SOIL

Sampling Point: E-2

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

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

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

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

Project/Site: Easton Ranch | City/County: Park | Sampling Date: 6/26/2012

Applicant/Owner: MDT | State: MT | Sampling Point: E-3

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

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

Subregion (LRR): LRR E | Lat: 46.059985 | Long: -110.639175 | Datum: WGS84

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

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

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

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

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

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

Remarks:
DP in veg com 8.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Bromus carinatus	35	☑	UPL
2. Phleum pratense	20	☑	FAC
3. Taraxacum officinale	10	☐	FACU
4. Trifolium pratense	10	☐	FACU
5. Carum carvi	10	☐	FACU
6. Poa pratensis	10	☐	FAC
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	95 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.5 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	30	x 4 =	120
UPL species	35	x 5 =	175
Column Totals:	95 (A)		385 (B)

Prevalence Index = B/A = 4.05263

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic 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:

SOIL

Sampling Point: E-3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 6/3	100					Clay Loam	very friable
6-13	10YR 6/3	95	10YR 4/6	3	C	M	Clay Loam	also w/ ~3% mg concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

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

Remarks:

No signs of recent hydro since over flow across surface during high spring runoff of 2011.

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

Project/Site: Easton Ranch | City/County: Park | Sampling Date: 6/26/2012

Applicant/Owner: MDT | State: MT | Sampling Point: E-4

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

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

Subregion (LRR): LRR E | Lat: 46.06077 | Long: -110.637471666667 | Datum: WGS84

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

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

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

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

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

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

Remarks:
DP in veg com 8.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Trifolium pratense	25	☑	FACU
2. Bromus carinatus	30	☑	UPL
3. Phleum pratense	20	☑	FAC
4. Carum carvi	10	☐	FACU
5. Brassica kaber	5	☐	UPL*
6. Medicago sativa	5	☐	UPL
7. Taraxacum officinale	5	☐	FACU
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.3333 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	40	x 4 =	160
UPL species	40	x 5 =	200
Column Totals:	100 (A)		420 (B)

Prevalence Index = B/A = 4.2

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic 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:

SOIL

Sampling Point: E-4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 6/3	100					Clay Loam	
3-16	10YR 4/2	90	10YR 4/6	5	C	M	Sandy Loam	also w/ ~5% redox depletion 10YR 2/2

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

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

Remarks:

No signs of wetland hydro in 2012, area flooded during 2011 spring runoff.

MDT Montana Wetland Assessment Form (revised March 2008)

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

3. Evaluation Date 6/26/2012 **4. Evaluators** B Sandefur **5. Wetland/Site# (s)** Creation

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

Approx Stationing or Mileposts NA

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

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 9.09

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 9.09

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Emergent Wetland	Excavated	Seasonal/Intermittant	90
Depressional	Aquatic Bed	Excavated	Seasonal/Intermittant	10

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

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

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

Cirsium arvense; Cynoglossum officinale

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

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

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

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

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

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)	◉ D ◉ S	
Secondary habitat (list Species)	◉ D ◉ S	
Incidental habitat (list species)	○ D ◉ S	Grizzly Bear (LT)
No usable habitat	▣ S	

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

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

Sources for documented use: USFWS - 2012 county species list; MNHP verified in Park County

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

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

Primary or critical habitat (list species)	◉ D ◉ S	
Secondary habitat (list Species)	○ D ○ S	
Incidental habitat (list species)	◉ D ○ S	Golden Eagle (S3)
No usable habitat	▣ S	

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

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

Sources for documented use: MTNHP

14C. General Wildlife Habitat Rating:

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

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

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

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

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

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

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

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

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

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

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

Comments Numerous shorebirds and waterfowl have been observed using this site from fall 2003 through 2012.

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.)

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

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

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

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

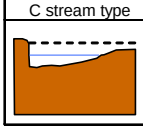
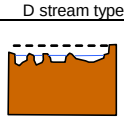
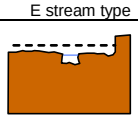
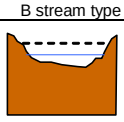
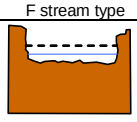
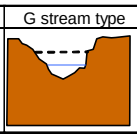
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

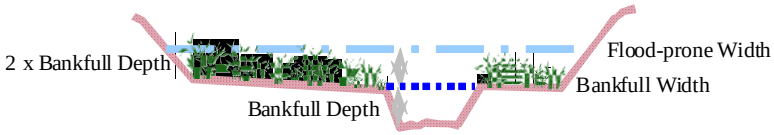
iii. Final Score and Rating: 0 NA **Comments:**

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

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

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



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

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

Comments: AA receives overbank flows from Shields River.

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

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

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

Comments: (9.09 acre wetland) x (1 ft. max depth at highwater) = 9.09 acre-feet. Inundation levels decreased after site visit based on MDT and aerial photos.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

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

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

Comments: Evidence of flooding/ponding in excavated depressions in 2012 and across the AA from 2011 runoff.

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

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

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

Comments: Increased vegetation development throughout AA and along edge of aquatic beds/open water from 2011 field survey.

14I. Production Export/Food Chain Support:

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

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

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

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

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

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

Comments:

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

i. Discharge Indicators

- ☐ The AA is a slope wetland
- ☑ Springs or seeps are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☐ Wetland occurs at the toe of a natural slope
- ☐ Seeps are present at the wetland edge
- ☐ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☑ Shallow water table and the site is saturated to the surface
- ☐ Other:

ii. Recharge Indicators

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

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

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

Comments: Ponding observed in a few excavated depression with saturation throughout a majority of AA.

14K. Uniqueness:

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

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

Comments: Vegetation across disturbed AA from 2010 construction becoming well-established.

14L. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

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

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

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

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

Comments:

Permission will be required.

General Site Notes

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.1	1	0.909	☐
B. MT Natural Heritage Program Species Habitat	L	.2	1	1.818	☑
C. General Wildlife Habitat	M	.7	1	6.363	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.5	1	4.545	☑
F. Short and Long Term Surface Water Storage	H	.8	1	7.272	☑
G. Sediment/Nutrient/Toxicant Removal	H	.9	1	8.181	☐
H. Sediment/Shoreline Stabilization	M	.6	1	5.454	☐
I. Production Export/Food Chain Support	H	.8	1	7.272	☐
J. Groundwater Discharge/Recharge	M	.7	1	6.363	☐
K. Uniqueness	M	.4	1	3.636	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.4545	☐
Totals:		5.75	10	52.2675	
Percent of Possible Score			**57.5** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

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

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

☑

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

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

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

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

3. Evaluation Date 6/26/2012 **4. Evaluators** B Sandefur **5. Wetland/Site# (s)** Preservation

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

Approx Stationing or Mileposts NA

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

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 1.1

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

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

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☐ **Mitigation Wetlands: post construction**

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

10. Classification of Wetland and Aquatic Habitats in AA

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

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

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

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

Canadian thistle and houndstongue

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

AA consists of small areas of existing Riverine PFO/PSS/PEM wetlands located at the northernwest (near Shields River) and southcentral ends of the mitigation area. The existing PFO/PEM habitat located at the southern end receives direct hydrologic inputs from the created flood channel. Both wetland features are bordered by created wetlands and the Shields River riparian corridor. AA includes communities 3, 4, & 5.

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

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

Comments: PEM, PFO, and PSS vegetated classes.

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)	◉ D ◉ S	
Secondary habitat (list Species)	◉ D ◉ S	
Incidental habitat (list species)	○ D ◉ S	Grizzly Bear
No usable habitat	▣ S	

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

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

Sources for documented use USFWS - 2012 county species list; MNHP verified in Park County

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

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

Primary or critical habitat (list species)	◉ D ◉ S	
Secondary habitat (list Species)	○ D ○ S	
Incidental habitat (list species)	◉ D ○ S	Golden Eagle(S3)
No usable habitat	▣ S	

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

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

Sources for documented use MTNHP, field observations.

14C. General Wildlife Habitat Rating:

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

Moderate

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

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

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

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

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

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

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

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

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

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

Comments Moderate use of site by moose, deer, and several avian species.

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.)

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

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

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

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

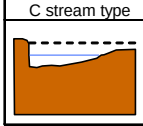
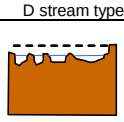
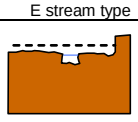
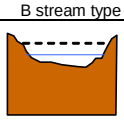
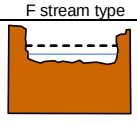
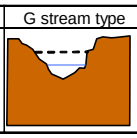
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

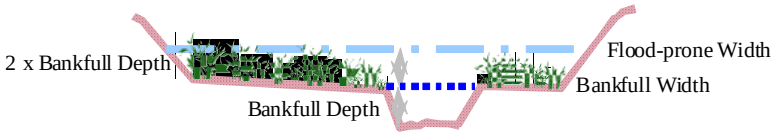
iii. Final Score and Rating: 0 NA **Comments:**

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

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

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



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

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

Comments: Approx. 30 percent 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.

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

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

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

Comments: (1.10 acre of preserved wetland) x (approx. average of 1.0 ft. of inundation during high water) = 1.10 acre-feet

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

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

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

Comments: Wetland vegetation cover exceeds 70%. Com 3 saturated/inundated from wetlands to north of site. AA contains restricted outl

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

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

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

Comments:

14I. Production Export/Food Chain Support:

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

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

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

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

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

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

Comments: There is a restricted surface water outlet to the south, continuation of relic flood channel.

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

i. Discharge Indicators

- ☐ The AA is a slope wetland
- ☐ Springs or seeps are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☐ Wetland occurs at the toe of a natural slope
- ☐ Seeps are present at the wetland edge
- ☐ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☑ Shallow water table and the site is saturated to the surface
- ☐ Other:

ii. Recharge Indicators

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

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

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

Comments: Aside from the northern part of Veg Com 3 which was inundated, the AA was saturated during 2012 investigation.

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

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

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

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

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

Comments:

Permission for access will be required.

General Site Notes

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.1	1	0.11	☐
B. MT Natural Heritage Program Species Habitat	L	.2	1	0.22	☐
C. General Wildlife Habitat	H	.9	1	0.99	☑
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.6	1	0.66	☑
F. Short and Long Term Surface Water Storage	H	.8	1	0.88	☐
G. Sediment/Nutrient/Toxicant Removal	H	1	1	1.1	☑
H. Sediment/Shoreline Stabilization	NA	0	0	0	☑
I. Production Export/Food Chain Support	E	1	1	1.1	☐
J. Groundwater Discharge/Recharge	H	1	1	1.1	☐
K. Uniqueness	M	.6	1	0.66	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.055	☐
Totals:		6.25	9	6.875	
Percent of Possible Score			**69.44** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

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

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

☐

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

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

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

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

3. Evaluation Date 6/26/2012 **4. Evaluators** B Sandefur **5. Wetland/Site# (s)** Restoration

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

Approx Stationing or Mileposts NA

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

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 1.45

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 1.45

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

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

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

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

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

Canada thistle; houndstongue

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 groundwater early in the growing season, and has developed wetland characteristics. The channel is bordered by created depressional wetland cells.

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

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

Comments: The AA consists entirely of palustrine emergent wetlands (PEM) although several shrubs appear to be surviving.

SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)	◉ D ◉ S	
Secondary habitat (list Species)	◉ D ◉ S	
Incidental habitat (list species)	○ D ◉ S	Grizzly Bear (LT)
No usable habitat	▣ S	

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

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

Sources for documented use: USFWS - 2012 county species list; MNHP verified in Park County

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

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

Primary or critical habitat (list species)	◉ D ◉ S	
Secondary habitat (list Species)	○ D ○ S	
Incidental habitat (list species)	◉ D ○ S	Golden Eagle(S3)
No usable habitat	▣ S	

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

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

Sources for documented use: Current and previous field observations.

14C. General Wildlife Habitat Rating:

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

Moderate

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

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

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

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

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

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

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

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

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

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

Comments Moose, deer, and several avian species observed throughout site.

14D. General Fish Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☑ **NA** here and proceed to 14E.)

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

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

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

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

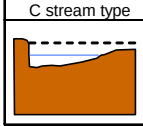
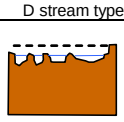
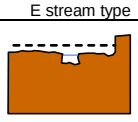
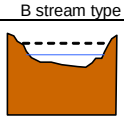
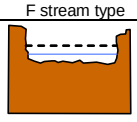
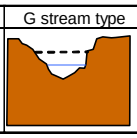
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

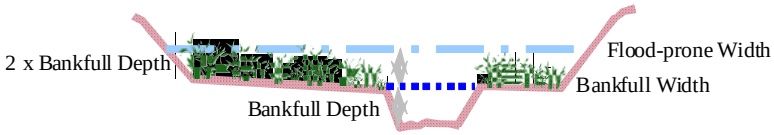
iii. Final Score and Rating: 0 NA **Comments:** Area receives preiodic overbank flow from Shields River, no perennial hydro source or suitable fish habitat identified.

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

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly entrenched - C, D, E stream types			Moderately entrenched – B stream type			Entrenched-A, F, G stream types		
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

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



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

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

Comments: Outlet is restricted. Discharges to Comm.5. AA subject to overflow from Shields River and empties into old meanders of the Shields River at south end of AA.

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

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

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

Comments: Scour and sediment deposition within created channel observed in 2012 suggest seasonal/intermittent flooding/ponding. (1.45 acre of restoration) x (average 1 ft. ponding/flow depth at highwater) = 1.45 acre-feet

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

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

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

Comments: Cover in AA is greater than 70% and outlet is restricted by topography . There was evidence of ponding observed in 2011 and 2012

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

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

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

Comments: Increased vegetation development between 2011 and 2012 of species with high stability ratings including, rush, mannagrass, sedges, and willows.

14I. Production Export/Food Chain Support:

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

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

ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

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

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

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

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

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

i. Discharge Indicators

- ☐ The AA is a slope wetland
- ☑ Springs or seeps are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☐ Wetland occurs at the toe of a natural slope
- ☐ Seeps are present at the wetland edge
- ☐ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☑ Shallow water table and the site is saturated to the surface
- ☐ Other:

ii. Recharge Indicators

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

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

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

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

14K. Uniqueness:

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

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

Comments: Reduction in disturbance in 2012 based on elapsed time from construction disturbance.

14L. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

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

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

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

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

Comments:

Permission for access will be required.

General Site Notes

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	.1	1	0.145	☐
B. MT Natural Heritage Program Species Habitat	L	.2	1	0.29	☐
C. General Wildlife Habitat	M	.7	1	1.015	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.6	1	0.87	☑
F. Short and Long Term Surface Water Storage	M	.6	1	0.87	☐
G. Sediment/Nutrient/Toxicant Removal	H	1	1	1.45	☑
H. Sediment/Shoreline Stabilization	M	.6	1	0.87	☐
I. Production Export/Food Chain Support	M	.7	1	1.015	☑
J. Groundwater Discharge/Recharge	M	.7	1	1.015	☑
K. Uniqueness	M	.4	1	0.58	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.0725	☐
Totals:		5.65	10	8.1925	
Percent of Possible Score			**56.5** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☐ Percent of possible score > 80% (round to nearest whole #).

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

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

☑

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

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

I	II	III	IV

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana



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



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



Photo Point 1 – *Photo 1*
Bearing: 190 Degrees
Location: East boundary
Taken in 2011



Photo Point 1 – *Photo 2*
Bearing: 250 Degrees
Location: East boundary
Taken in 2011



Photo Point 1 – *Photo 1*
Bearing: 190 Degrees
Location: East boundary
Taken in 2012



Photo Point 1 – *Photo 2*
Bearing: 250 Degrees
Location: East boundary
Taken in 2012



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



Photo Point 2 – *Photo 1* **Location:** NE corner of site
Bearing: 200 Degrees **Taken in 2010**



Photo Point 1 – *Photo 3* **Location:** East boundary
Bearing: 300 Degrees **Taken in 2011**



Photo Point 2 – *Photo 1* **Location:** NE corner of site
Bearing: 200 Degrees **Taken in 2011**



Photo Point 1 – *Photo 3* **Location:** East boundary
Bearing: 300 Degrees **Taken in 2012**



Photo Point 2 – *Photo 1* **Location:** NE corner of site
Bearing: 200 Degrees **Taken in 2012**



Photo Point 3 – *Photo 1* **Location:** NW corner of site
Bearing: 140 Degrees **Taken in 2010**



Photo Point 4A – *Photo 1* **Location:** Shields Bank-DS
Bearing: 170 Degrees **Taken in 2010**



Photo Point 3 – *Photo 1* **Location:** NW corner of site
Bearing: 140 Degrees **Taken in 2011**



Photo Point 4A – *Photo 1* **Location:** Shields Bank-DS
Bearing: 170 Degrees **Taken in 2011**



Photo Point 3 – *Photo 1* **Location:** NW corner of site
Bearing: 140 Degrees **Taken in 2012**



Photo Point 4A – *Photo 1* **Location:** Shields Bank-DS
Bearing: 170 Degrees **Taken in 2012**



Photo Point 4B – *Photo 1* **Location:** Shields Bank-upstream
Bearing: 20 Degrees **Taken in 2010**



Photo Point 5 – *Photo 1* **Location:** West boundary
Bearing: 105 Degrees **Taken in 2010**



Photo Point 4B – *Photo 1* **Location:** Shields Bank-upstream
Bearing: 20 Degrees **Taken in 2011**



Photo Point 5 – *Photo 1* **Location:** West boundary
Bearing: 105 Degrees **Taken in 2011**



Photo Point 4B – *Photo 1* **Location:** Shields Bank-upstream
Bearing: 20 Degrees **Taken in 2012**



Photo Point 5 – *Photo 1* **Location:** West boundary
Bearing: 105 Degrees **Taken in 2012**



Photo Point 6 – *Photo 1*
Bearing: 0 Degrees
Location: SW corner of site
Taken in 2010



Photo Point 7 – *Photo 1*
Bearing: 340 Degrees
Location: SE corner of site
Taken in 2010



Photo Point 6 – *Photo 1*
Bearing: 0 Degrees
Location: SW corner of site
Taken in 2011



Photo Point 7 – *Photo 1*
Bearing: 340 Degrees
Location: SE corner of site
Taken in 2011



Photo Point 6 – *Photo 1*
Bearing: 0 Degrees
Location: SW corner of site
Taken in 2012



Photo Point 7 – *Photo 1*
Bearing: 340 Degrees
Location: SE corner of site
Taken in 2012



Veg Tran 1 – *Start*
Bearing: 5 Degrees
Location: Veg Com 2 foreground
Taken in 2010



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



Veg Tran 1 – *Start*
Bearing: 5 Degrees
Location: Veg Com 2 foreground
Taken in 2011



Veg Tran 1 – *End*
Bearing: 180 Degrees
Location: Veg Com 1 foreground
Taken in 2011



Veg Tran 1 – *Start*
Bearing: 5 Degrees
Location: Veg Com 2 foreground
Taken in 2012



Veg Tran 1 – *End*
Bearing: 180 Degrees
Location: Veg Com 1 foreground
Taken in 2012



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



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



Veg Tran 2 – *Start*
Bearing: 180 Degrees
Location: Veg Com 3 foreground
Taken in 2011



Veg Tran 2 – *End*
Bearing: 0 Degrees
Location: Veg Com 1 foreground
Taken in 2011



Veg Tran 2 – *Start*
Bearing: 180 Degrees
Location: Veg Com 3 foreground
Taken in 2012



Veg Tran 2 – *End*
Bearing: 0 Degrees
Location: Veg Com 1 foreground
Taken in 2012



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



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



Veg Tran 3 – *Start*
Bearing: 95 Degrees
Location: Veg Com 1 foreground
Taken in 2011



Veg Tran 3 – *End*
Bearing: 265 Degrees
Location: Veg Com 1 foreground
Taken in 2011



Veg Tran 3 – *Start*
Bearing: 95 Degrees
Location: Veg Com 1 foreground
Taken in 2012



Veg Tran 3 – *End*
Bearing: 265 Degrees
Location: Veg Com 1 foreground
Taken in 2012



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

Location: NE corner of site
Taken in 2010



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

Location: NE corner of site
Taken in 2011



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

Location: NE corner of site
Taken in 2012



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

Location: NW corner of site
Taken in 2010



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

Location: NW corner of site
Taken in 2011



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

Location: NW corner of site
Taken in 2012



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

Location: Western boundary of site
Taken in 2010



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

Location: Western boundary of site
Taken in 2011



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

Location: Western boundary of site
Taken in 2011



Data Point: E-1
Location:
Bearing:
Taken in 2012



Data Point: E-2
Location:
Bearing:
Taken in 2012



Data Point: E-3
Location:
Bearing:
Taken in 2012

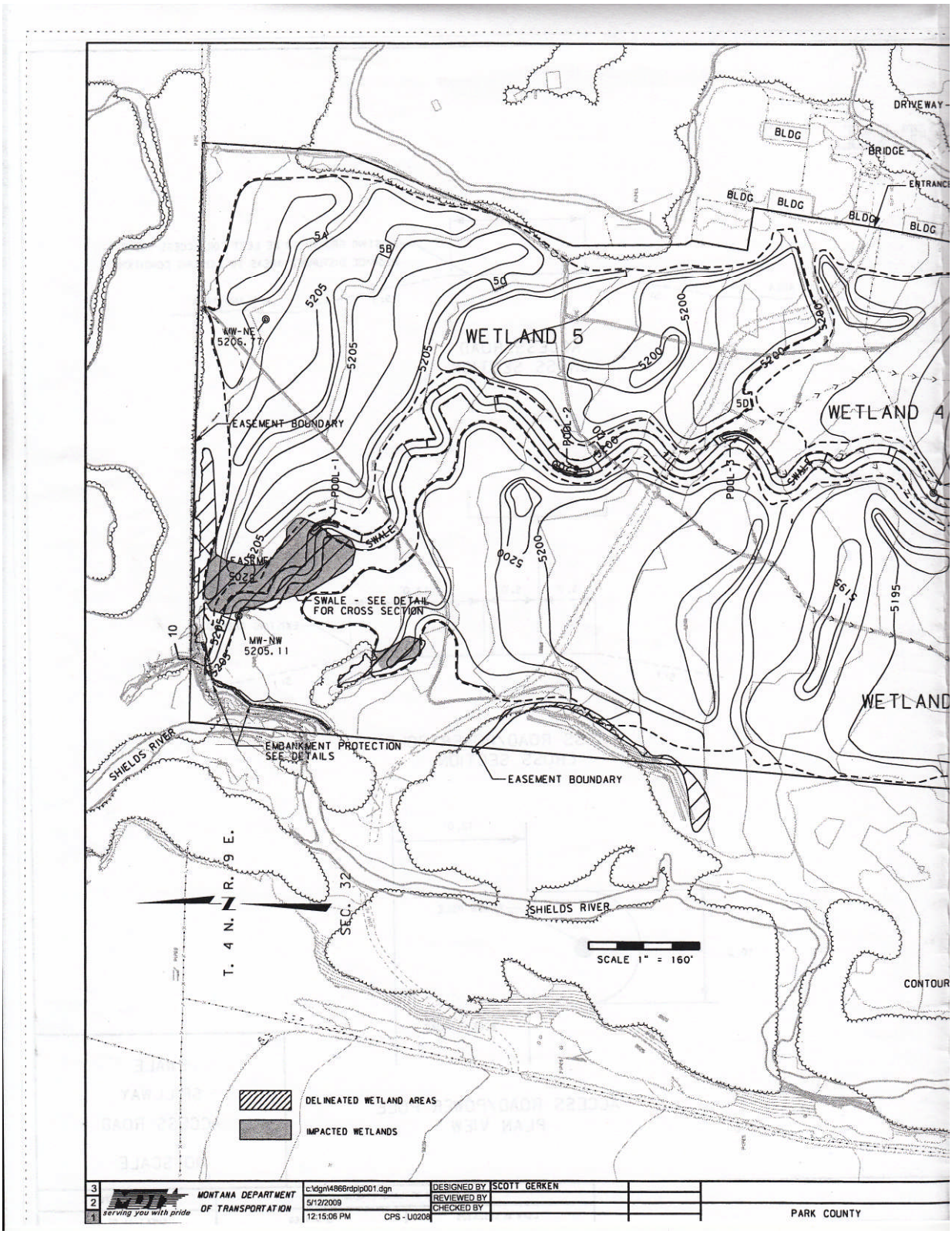


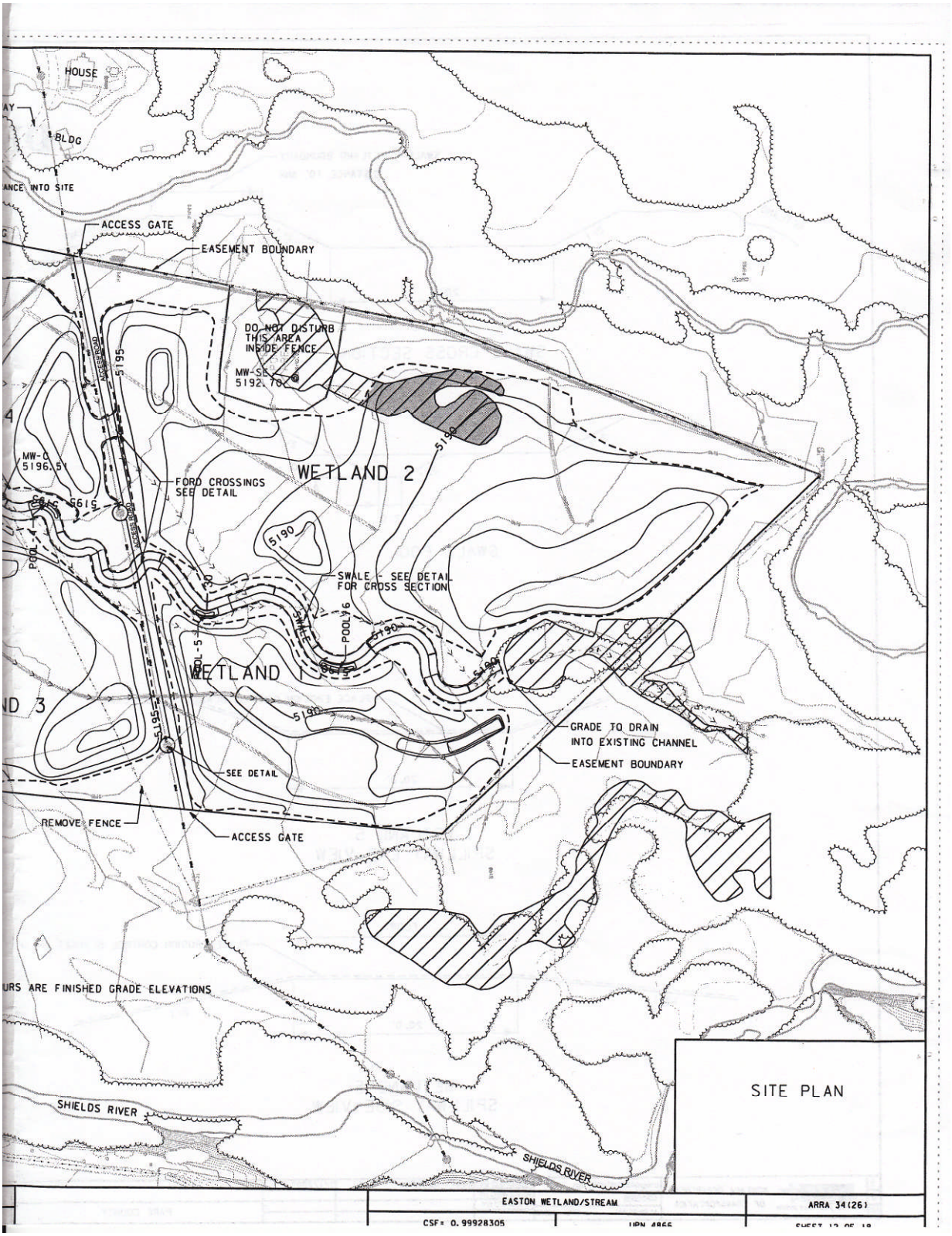
Data Point: E-4
Location:
Bearing:
Taken in 2012

Appendix D

Project Plan Sheets

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana


DRIVEWAY
BLDG
BRIDGE
ENTRANCE
BLDG
BLDG
BLDG
BLDG
WETLAND 5
WETLAND 4
WETLAND
MW-NE
5206.77
MW-NW
5205.11
EASEMENT BOUNDARY
POOL-1
POOL-2
POOL-3
SWALE
SWALE - SEE DETAIL FOR CROSS SECTION
EMBANKMENT PROTECTION SEE DETAILS
EASEMENT BOUNDARY
SHIELDS RIVER
SHIELDS RIVER
T. 4 N. R. 9 E.
SEC. 32
SCALE 1" = 160'
CONTOUR
DELINEATED WETLAND AREAS
IMPACTED WETLANDS
MONTANA DEPARTMENT OF TRANSPORTATION
serving you with pride
c:\dgn\4866rdplp001.dgn
5/12/2009
12:15:06 PM
CPS - U0208
DESIGNED BY SCOTT GERKEN
REVIEWED BY
CHECKED BY
PARK COUNTY


HOUSE
BLDG
ACCESS GATE
EASEMENT BOUNDARY
DO NOT DISTURB THIS AREA INSIDE FENCE
MW-SE 5192.70
MW-C 5196.5
FORD CROSSINGS SEE DETAIL
WETLAND 2
WETLAND 1
SWALE - SEE DETAIL FOR CROSS SECTION
POOL 96
POOL 5
GRADE TO DRAIN INTO EXISTING CHANNEL
EASEMENT BOUNDARY
SEE DETAIL
REMOVE FENCE
ACCESS GATE
SHIELDS RIVER
SHIELDS RIVER
SITE PLAN
EASTON WETLAND/STREAM
ARRA 34(26)