MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2010

Easton Ranch
Park County, Montana



Prepared for:

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MORRISON MAIERLE, INC.
An Employee-Owned Company

December 2010

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WETLAND MITIGATION MONITORING REPORT:

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Easton Ranch
Park County, Montana

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

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1. INTRODUCTION

The Easton Ranch Wetland Mitigation 2010 Monitoring Report presents the results of the first of a minimum of five years 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 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 (MDT 2008). Figures 2 and 3 in Appendix A show the site monitoring activity locations and mapped site features, respectively. The MDT Mitigation Monitoring Form, US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (USACE 2010), and the 2008 MDT Montana Wetland Assessment Forms are included in Appendix B. Representative 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 developed at this location are 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 County Conservation District (PCCD) 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 during high flows and flood events 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, transplanting wetland plants and soils from existing wetlands to excavated areas, and recruiting indigenous plants.

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 are listed below.

- Re-establish a previously existing relic floodplain channel and the 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

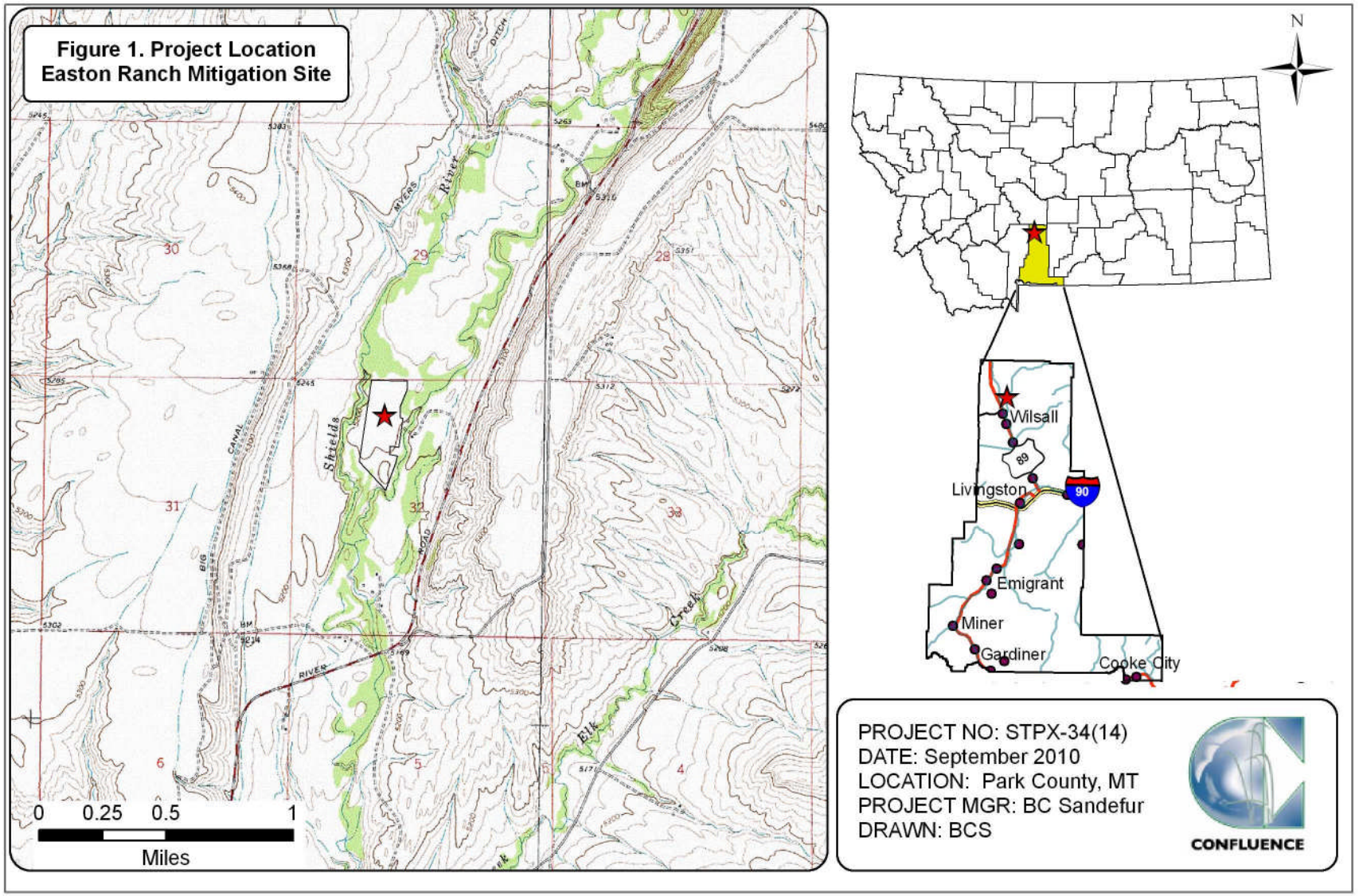


Figure 1. Project location of Easton Ranch Mitigation Site.

- communities that mimic habitats found in bio-reference wetland areas located north and south of the project.
- Re-establish hydrology to approximately 1.56 acres of drained wetlands in the northern portion of the site. Preserve 1.1 acres of existing scrub/shrub wetland and forested riparian 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 U.S. Army Corps of Engineers (USACE) are shown in Table 1 (MDT 2008).

Table 1. Determination of Wetland Credits.

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 approved performance standards are listed below (MDT 2008).

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 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*), beaked 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. MDT will manage the wetland conservation easement area to meet a goal of having less than 5percent absolute cover of state listed noxious weed species across the site. The land owner is currently managing the property to control current weed problems (knapweed and hounds tongue) prior to the initiation of wetland construction activities within 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 first year of monitoring was completed on August 25, 2010. Information for the Wetland Mitigation Site Monitoring Form and USACE Routine Wetland Determination Data Form (USACE 2010) was entered electronically in the field on a personal digital assistant (PDA) 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: wetland delineation, vegetation community mapping, vegetation transect monitoring, soil data collection, hydrology data collection, bird and wildlife use documentation, photographs, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

Hydrological indicators as outlined on the USACE wetland determination data form were documented 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 electronic field data sheets (Appendix B). Hydrologic assessments allow evaluation of mitigation goals 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 where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit (Environmental Laboratory 1987). The growing season recorded for the predominant soil map unit, Meadowcreek series (155A), averages 80 days (USDA 2010). Areas defined as wetlands would require 10 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 was recorded on the delineation data form (Appendix B).

2.2. Vegetation

The boundaries of dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on aerial photographs. Percent cover of dominant species within a community type was estimated and recorded using the following values: 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).

Temporal changes in vegetation will be evaluated through annual assessments of static belt transects established in August 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 1,072, 1,333, and 733 feet long, respectively (Figure 2, Appendix A). Transects two and three 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 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 installed 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 "+", "▲", 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. A description of the soil profile, including hydric soil indicators when present, was recorded on the USACE Wetland Determination 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 indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). A Routine Level-2 on-site Determination Method (USACE 2010) was used to delineate jurisdictional areas within the project boundaries. The information was recorded electronically on the USACE 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 aerial photograph. Wetland areas were estimated using geographic information system (GIS) methodology.

2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the wetland monitoring form during the site visit. Indirect use indicators, including tracks, scat, burrow, eggshells, skins, and bones, were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive wildlife species list of species observed in 2010 was 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 in 2010. 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. A Functional Assessment Form was completed for the 34-acre project area (Appendix B).

2.7. Photo Documentation

Monitoring at photo points provided supplemental information documenting wetland condition, trends, current land use surrounding the site, the upland buffer, the monitored area, and the vegetation transects. Photographs were taken at established photo points throughout the mitigation site during the site visit (Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 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 2010 monitoring season. Points were collected using WAAS-enabled differential corrected satellites, typically improving resolution to sub-meter accuracy. The GPS data were subsequently exported into GIS and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph and then digitized. Site features and survey points that were mapped included fence boundaries, photograph points, transect beginnings and endings, wetland boundaries, and vegetation community boundaries.

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 20.15 inches from April 1957 to April 2010 (WRCC 2010). The annual precipitation rate recorded in 2009 was 16.65 inches. A rate of 10.02 and 13.88 inches was recorded from January to July 2009 and 2010, respectively. The 53 year average for the same time period was 13.36 inches. The average precipitation in 2010 was higher than the 53 year average for the period of record.

The irrigation diversion system located upgradient of the wetland cells was closed during the August investigation. The onsite hydrological conditions were drier than anticipated during the first growing season. Approximately five percent of the site was inundated with surface water depths ranging from 0 to 18 inches. Data point E-2 (Figure 2, Appendix A) located within wetland community Type 3 (see type descriptions in the following sections) exhibited saturated soil at 10 inches below the ground surface (bgs). Wetland Type 5 data point E-3 revealed saturated soil at 8 inches bgs. Data point E-4, located within wetland Type 7, had a high water table recorded at 10 inches bgs and saturated soil at 2 inches bgs.

3.2. Vegetation

Monitoring year 2010 marked the first year of monitoring on the Easton Ranch wetland mitigation site. The purpose of the first year of monitoring was to establish a baseline for monitoring and describing the vegetation types and coverage of the wetland mitigation area. Sixty-five plant species were observed site wide in 2010, the first year of monitoring. Vegetation plant communities were identified by plant composition and dominance, topography, and hydrology. The communities and associated species composition is shown on the Monitoring Form in Appendix B and the communities are illustrated on Figure 3 in Appendix A. The irrigation diversion system located upgradient of the wetland cells was closed during the August investigation resulting in drier site conditions than anticipated during the first growing season, which affected wetland development.

Vegetation community types named for the dominant species based on percent cover were Type 1 – *Phleum pratense/Poa pratensis* Upland; Type 2 – *Chenopodium* spp./*Phleum pratense* Upland; Type 3 – *Carex* spp. Wetland; Type 4 – *Salix drummondiana /Carex* spp. Wetland; Type 5 – *Populus angustifolia* Wetland; Type 6 – *Beckmannia syzigachne* Wetland; and Type 7 – Transitional open water (Figure 3, Appendix A). Type 7 was characterized by the presence of 0.0 to 1.5 feet of water and a lack of vegetation.

Upland community Type 1 – *Phleum pratense/Poa pratensis* was identified in the higher elevation upland areas that surround the constructed wetland cells and channel (Figure 3, Appendix A). The species were dominated by herbaceous species in descending order of abundance including common timothy (*Phleum*

pratense), Kentucky bluegrass (*Poa pratensis*) smooth brome, (*Bromus inermis*), quack grass (*Agropyron repens*), redtop (*Agrostis stolonifera*), with minor (1 to 5 percent) cover of wild mustard (*Brassica kaber*), Japanese brome (*Bromus japonicus*), caraway (*Carum carvi*), common sunflower (*Helianthus annuus*), bluejoint reedgrass (*Calamagrostis canadensis*), orchard grass (*Dactylis glomerata*), quaking aspen (*Populus tremula*), and white clover (*Trifolium repens*).

Upland community Type 2 – *Chenopodium* spp./*Phleum pratense* was identified in the driest areas of the constructed wetland cells. The vegetation cover was comprised of white (*Chenopodium album*) and narrow-leaf (*Chenopodium leptophyllum*) goosefoot, common timothy, common dandelion (*Taraxacum officinale*), with minor cover contributed by wild mustard, Japanese brome, Canada thistle (*Cirsium arvense*), Western stickseed (*Lappula occidentalis*), fringed brome (*Bromus marginatus*), caraway, bull thistle (*Cirsium vulgare*), rough bugleweed (*Lycopus asper*), tall tumble mustard (*Descuriania sophia*), and field pennycress (*Thlaspi arvense*).

Wetland community Type 3 – *Carex* species (spp.) encompassed pre-existing wetlands located at the north and west edges of the site. The community was dominated by beaked sedge (*Carex rostrata*), Nebraska sedge (*Carex nebrascensis*), water sedge (*Carex aquatilis*), sandbar willow (*Salix exigua*), American sloughgrass (*Beckmannia syzigachne*), Canada thistle, poverty rush (*Juncus tenuis*), common mint (*Mentha arvensis*), cloaked bulrush (*Scirpus pallidus*), fowl mannagrass (*Glyceria striata*), rough bugleweed, common plantain (*Plantago major*), and small-fruited bulrush (*Scirpus microcarpus*).

Wetland community Type 4 – *Salix drummondiana /Carex* spp was identified in a small area located in the southwest corner of the site near the bank of the Shields River. The area encompassed pre-existing wetland dominated by Drummond willow (*Salix drummondiana*), Nebraska sedge, reed canary grass (*Phalaris arundinacea*), American sloughgrass, field clustered sedge (*Carex praegracilis*), tall mannagrass (*Glyceria grandis*), small-fruited bulrush, water foxtail (*Alopecurus geniculatus*), hairy willow herb (*Epilobium ciliatum*), and common mint.

Community Type 5 – *Populus angustifolia* was a pre-existing wetland with a woody overstory located adjacent to the construction area. The vegetation community was dominated by narrow-leaf cottonwood (*Populus angustifolia*), tall mannagrass, redtop, common timothy with minor cover contributed by American sloughgrass, beaked sedge, common mint, water sedge, Canada thistle, rough bugleweed, and small-fruited bulrush.

The areas within the constructed cells and channel with higher moisture levels were characterized by wetland community Type 6 – *Beckmannia syzigachne*. Isolated areas of the community were inundated at the time of the field investigation with evidence of increased areas of inundation during the first

portion of the growing season and saturation contributed by groundwater. The community type was dominated by American sloughgrass with the remainder of species each contributing less than 10 percent to total cover. The remaining species identified in this community included water plantain (*Alisma gramineum*), broad-leaf cattail (*Typha latifolia*), redtop, toad rush (*Juncus bufonius*), soft rush (*Juncus effusus*), hairy willow herb, and common plantain.

Table 2. Vegetation species observed in 2010 at the Easton Ranch Wetland Mitigation Site.

SCIENTIFIC NAME	COMMON NAME	REGION 9 INDICATOR STATUS[1]
Achillea millefolium	yarrow,common	FACU
Agropyron repens	quackgrass	FACU
Agrostis stolonifera	bentgrass,spreading	FAC+
Alisma gramineum	water-plantain,narrow-leaf	OBL
Alnus incana	alder,speckled	FACW
Alopecurus geniculatus	foxtail,meadow	FACW+
Amaranthus retroflexus	amaranth,red-root	FACU+
Beckmannia syzigachne	sloughgrass, American	OBL
Brassica kaber	mustart, wild	NL
Bromus ciliatus	brome,fringed	FAC+
Bromus inermis	smooth brome	NL
Bromus japonicus	brome, Japanese	FACU
Bromus marginatus	brome, mountain	NL
Calamagrostis canadensis	reedgrass,blue-joint	FACW+
Carex aquatilis	sedge,water	OBL
Carex nebrascensis	sedge, Nebraska	OBL
Carex praegracilis	sedge,clustered field	FACW
Carex rostrata (*utriculata**)	sedge,beaked	OBL
Carum carvi	caraway	NL
Chenopodium album	goosefoot,white	FAC
Chenopodium leptophyllum	goosefoot,narrow-leaf	FACU
Cirsium arvense	thistle,creeping	FACU+
Cirsium vulgare	thistle,bull	FACU
Convulvus arvensis	bindweed, field	NL
Cornus stolonifera	dogwood,red-osier	FACW
Dactylis glomerata	grass,orchard	FACU
Descuriania sophia	mustard, tansy	NL
Epilobium ciliatum	willow-herb,hairy	FACW-
Equisetum arvense	horsetail,field	FAC
Equisetum hyemale	horsetail,rough	FACW
Glyceria grandis	mannagrass, American	NL
Glyceria striata	mannagrass,fowl	OBL
Helianthus annuus	sunflower,common	FACU+
Juncus bufonius	rush,toad	FACW+
Juncus effusus	rush,soft	FACW+

[1]Region 9 (Northwest) (Reed 1988).
*Commonly accepted name not included in 1988 list.

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

SCIENTIFIC NAME	COMMON NAME	REGION 9 INDICATOR STATUS[1]
Juncus tenuis	rush,slender	FAC
Lappula occidentalis	stickseed, flatspine	NL
Lycopus asper	bugleweed,rough	OBL
Medicago lupulina	medic,black	FAC
Melilotus officinalis	sweetclover,yellow	FACU
Mentha arvensis	mint,field	FAC
Mimulus guttatus	monkey-flower,common large	OBL
Phalaris arundinacea	grass,reed canary	FACW
Phleum pratense	timothy	FACU
Plantago major	plantain,common	FAC+
Poa pratensis	bluegrass, Kentucky	FACU+
Polypogon monspeliensis	grass,annual rabbit-foot	FACW+
Populus angustifolia	cotton-wood, narrow-leaf	FACW
Populus tremula (*tremuloides* *)	aspen,quaking	FAC+
Potentilla gracilis	cinquefoil, northwest	FAC
Rhamnus alnifolia	buckthorn,alder-leaf	FACU
Rumex crispus	dock,curly	FACW
Salix drummondiana	willow, Drummond	FACW
Salix exigua	willow,sandbar	OBL
Scirpus microcarpus	bulrush,small-fruit	OBL
Scirpus pallidus	bulrush,cloaked	OBL
Sisymbrium altissimum	mustard,tall tumble	FACU-
Stellaria graminea	starwort,lesser	FAC-
Taraxacum officinale	dandelion,common	FACU
Thlaspi arvense	penny-cress,field	NI
Trifolium pratense	clover,red	FACU
Trifolium repens	clover,white	FACU+
Triglochin maritimum	arrow-grass,seaside	OBL
Typha latifolia	cattail, broad-leaf	OBL

[1]Region 9 (Northwest) (Reed 1988).
*Commonly accepted name not included in 1988 list.

The number (polygon) 7 on Figure 3 (Appendix A) was defined by transitional open water with trace amounts of water plantain and beaked sedge found in the inundated depressions within the constructed wetland cells. There were areas of shallow water ranging from 0 to 18 inches deep and saturation to the ground surface within the transitional open water areas. The plant cover of wetland species is expected to increase long-term. The extent of inundation appeared to be higher during the July 17, 2010, aerial reconnaissance than observed during the August 25 field visit, suggesting a seasonal fluctuation of the water table (Figure 3, Appendix A.). Late season monitoring in 2010 may not reflect changes in hydrologic assessment at the site. Future monitoring events will be conducted earlier in the growing season.

Three vegetation transects were monitored at the Easton Ranch Wetland Mitigation Site in 2010 (Figure 2, Appendix A). The data recorded on Transect 1

(Monitoring Forms, Appendix B) is summarized in tabular and graphical formats on Table 3 and Chart 1 and Chart 2, respectively. The transect ends were photographed (Page C-2 in Appendix C). Transect 1 extends 1,072 feet from south to north across several constructed cells located west of the channel. The transect intervals alternated between upland communities Types 1 and 2, wetland community Type 6, and transitional open water. Hydrophytic vegetation communities dominated 28 percent of Transect 1.

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

Monitoring Year	2010
Transect Length (feet)	**1072**
Vegetation Community Transitions along Transect	11
Vegetation Communities along Transect	3
Hydrophytic Vegetation Communities along Transect	1
Total Vegetative Species	33
Total Hydrophytic Species	15
Total Upland Species	18
Estimated % Total Vegetative Cover	65
% Transect Length Comprising Hydrophytic Vegetation Communities	28
% Transect Length Comprising Upland Vegetation Communities	70
% Transect Length Comprising Unvegetated Open Water	2.5
% Transect Length Comprising Bare Substrate	0.0

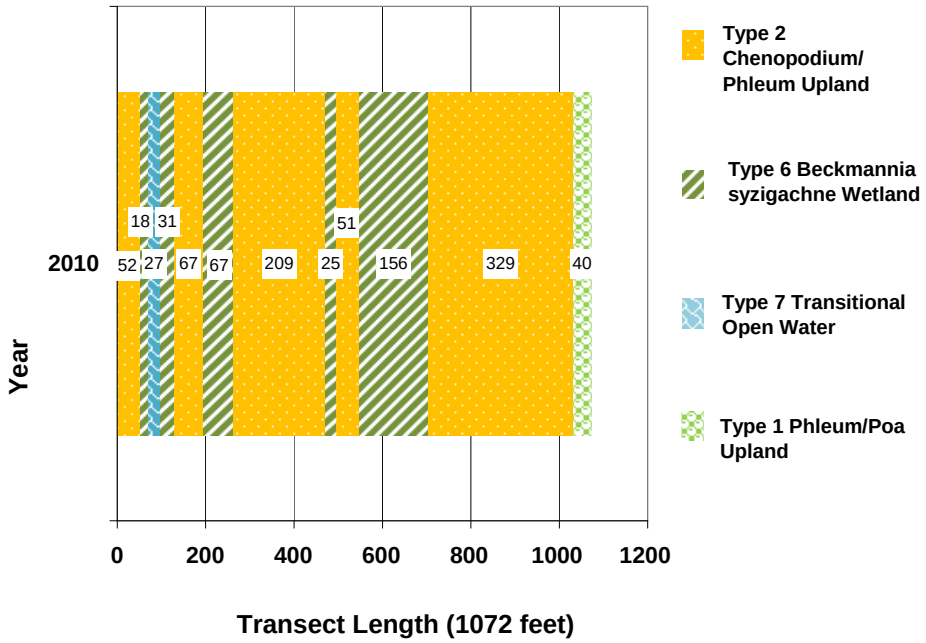


Chart 1. Transect map showing community types on Transect 1 in 2010 from start (0 feet) to end (1072 feet) at Easton Ranch.

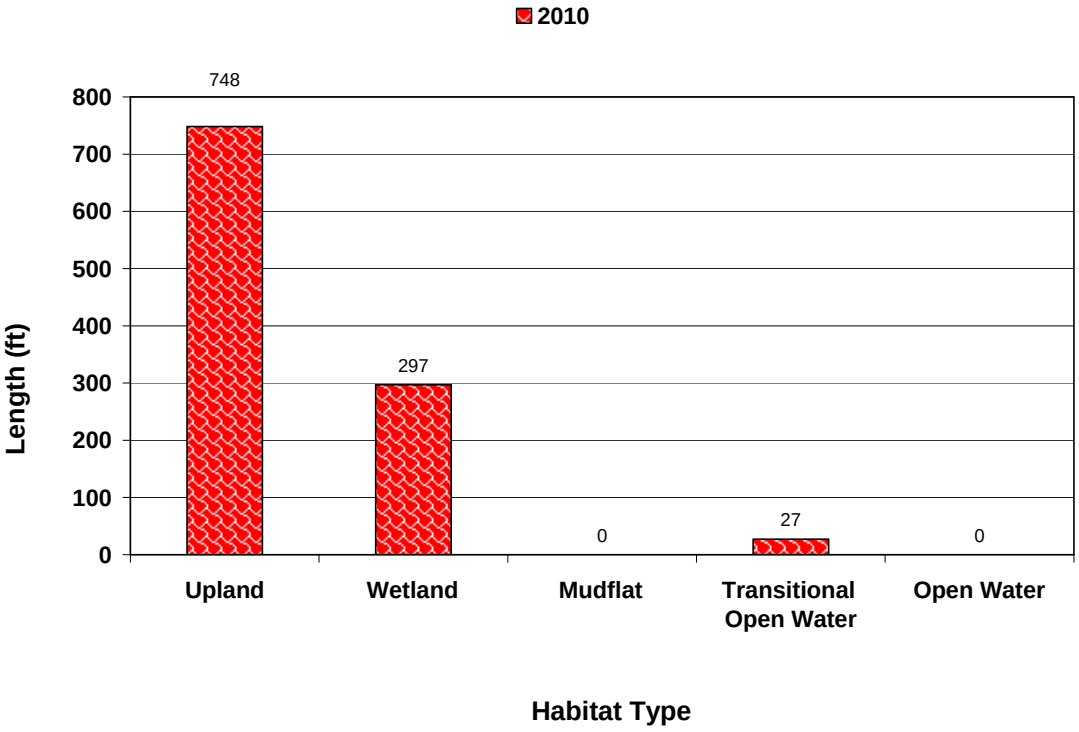


Chart 2. Length of habitat types within Transect 1 in 2010 at Easton Ranch.

Data collected on Transect 2 (Monitoring Form, Appendix B) were summarized in tabular and graphic formats (Table 5, Charts 3 and 4, respectively). The start and end of Transect 2 were photographed (Page C-3 in Appendix C). Hydrophytic vegetation communities dominated 38.7 percent of Transect 2.

Table 4. Data summary for Transect 2 in 2010 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	**2010**
Transect Length (feet)	**1333**
Vegetation Community Transitions along Transect	11
Vegetation Communities along Transect	4
Hydrophytic Vegetation Communities along Transect	2
Total Vegetative Species	35
Total Hydrophytic Species	17
Total Upland Species	18
Estimated % Total Vegetative Cover	65
% Transect Length Comprising Hydrophytic Vegetation Communities	38.7
% Transect Length Comprising Upland Vegetation Communities	61.3
% Transect Length Comprising Unvegetated Open Water	0.0
% Transect Length Comprising Bare Substrate	0.0

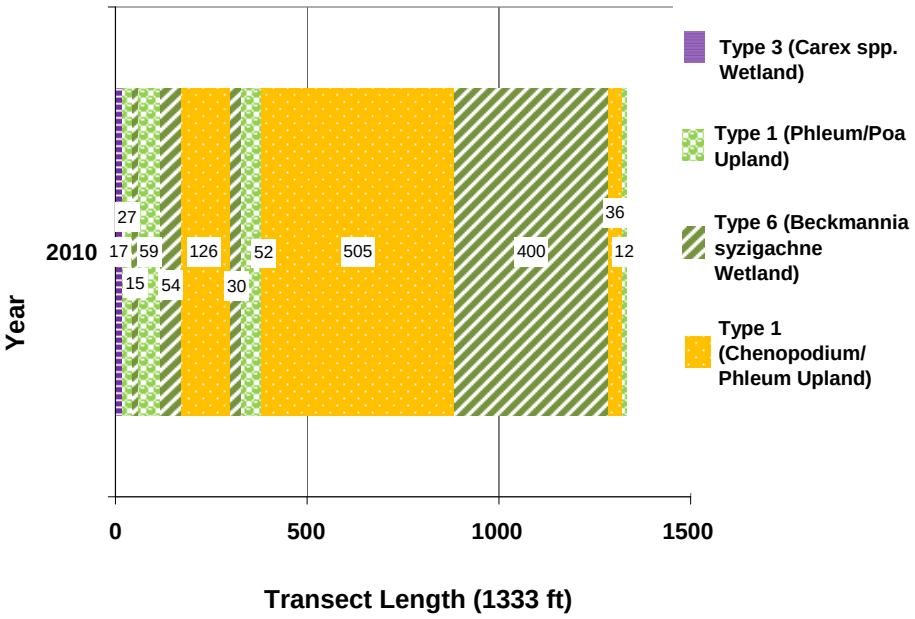


Chart 3. Transect maps showing community types on Transect 2 from start (0 feet) to end (1,333 feet) at Easton Ranch.

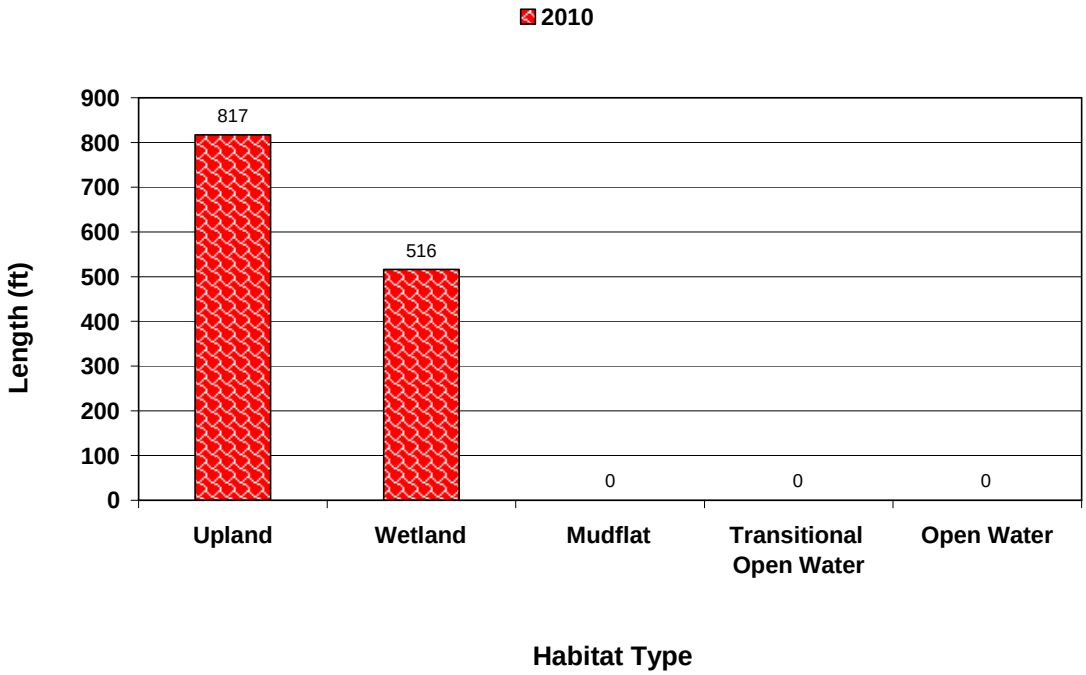


Chart 4. Length of habitat types within Transect 2 in 2010 at Easton Ranch.

Transect 2 traverses the constructed wetlands located east of the channel from north to south. The transect crosses the constructed channel within the first 100 feet. The transect intervals intercepted wetland communities Types 3 and 6 and upland communities Types 1 and 2.

Transect 3 data (Monitoring Form, Appendix B) were summarized in tabular and graphic formats (Table 5 and Charts 5 and 6, respectively). The start and end of Transect 3 were photographed (Page C-3 in Appendix C).

Table 5. Data summary for Transect 3 in 2010 at the Easton Ranch Wetland Mitigation Site.

Monitoring Year	**2010**
Transect Length (feet)	**751**
Vegetation Community Transitions along Transect	11
Vegetation Communities along Transect	3
Hydrophytic Vegetation Communities along Transect	1
Total Vegetative Species	24
Total Hydrophytic Species	11
Total Upland Species	13
Estimated % Total Vegetative Cover	65
% Transect Length Comprising Hydrophytic Vegetation Communities	45
% Transect Length Comprising Upland Vegetation Communities	55
% Transect Length Comprising Unvegetated Open Water	0
% Transect Length Comprising Bare Substrate	0

Transect 3 was established west to east across the constructed cells and channel in the southern half of the site (Figure 2, Appendix A). This transect crosses the constructed floodplain channel between station 270 and 284 feet. The channel crossing was characterized by a dominance of American sloughgrass with 21 to 50 percent bare ground in portions of the interval. The transect intervals intercepted one wetland community, Type 6 and two upland communities, Types 1 and 2. Hydrophytic vegetation dominated 45 percent of Transect 3. This area of the site has a slightly lower grade and appears to intercept more groundwater than the northern half of the wetland complex.

Eight separate infestations of Canada thistle were identified in uplands around the site. Canada thistle is a Priority 2B noxious weed. The infestations shown on Figure 3 ranged in area from less than 0.1 acre to 0.1 to 1.0 acre. The cover classes ranged from low (1 to 5 percent cover) to moderate (5 to 25 percent cover). Isolated Canada thistle plants were observed in communities 2, 3 and 5. Non-noxious, invasive species included white and narrow-leaf goosefoot, common dandelion, wild mustard, Japanese brome, Western stickseed, fringed brome, caraway, rough bugleweed, tall tumble mustard, and field pennycress.

Several cuttings and containerized materials were planted along the constructed flood channel to increase root stability. The first year survival for both containerized plantings and cuttings was high, with over 90 percent of the observed plants supporting green leaves and living stems.

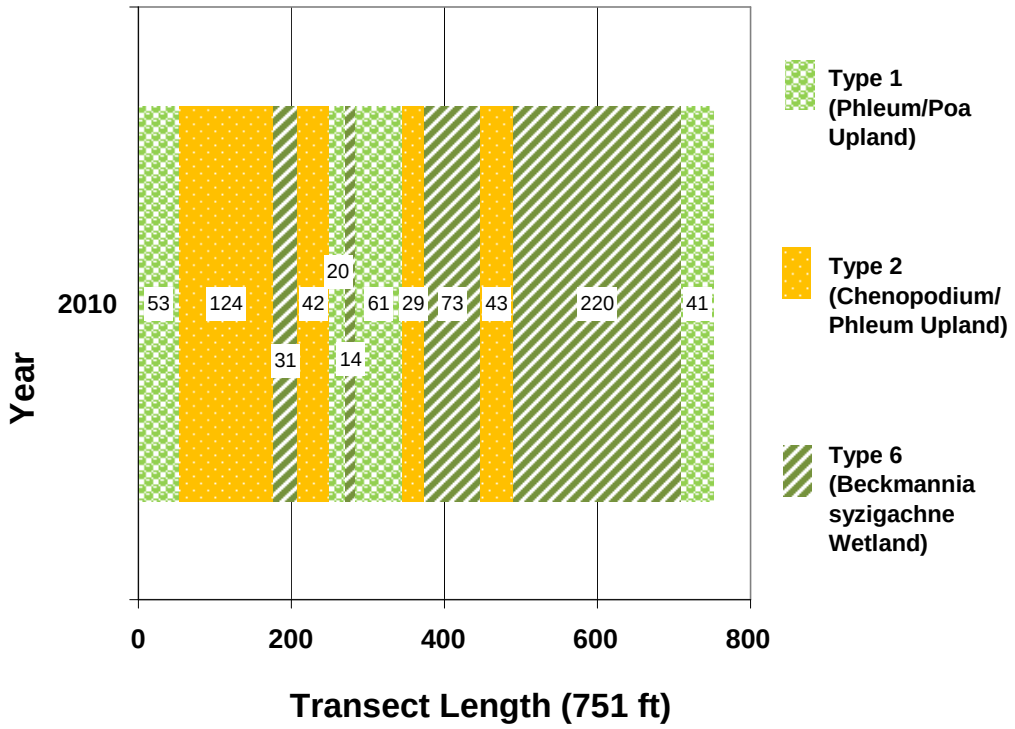


Chart 5. Transect maps showing community types on Transect 3 in 2010 from start (0 feet) to end (751 feet) at Easton Ranch.

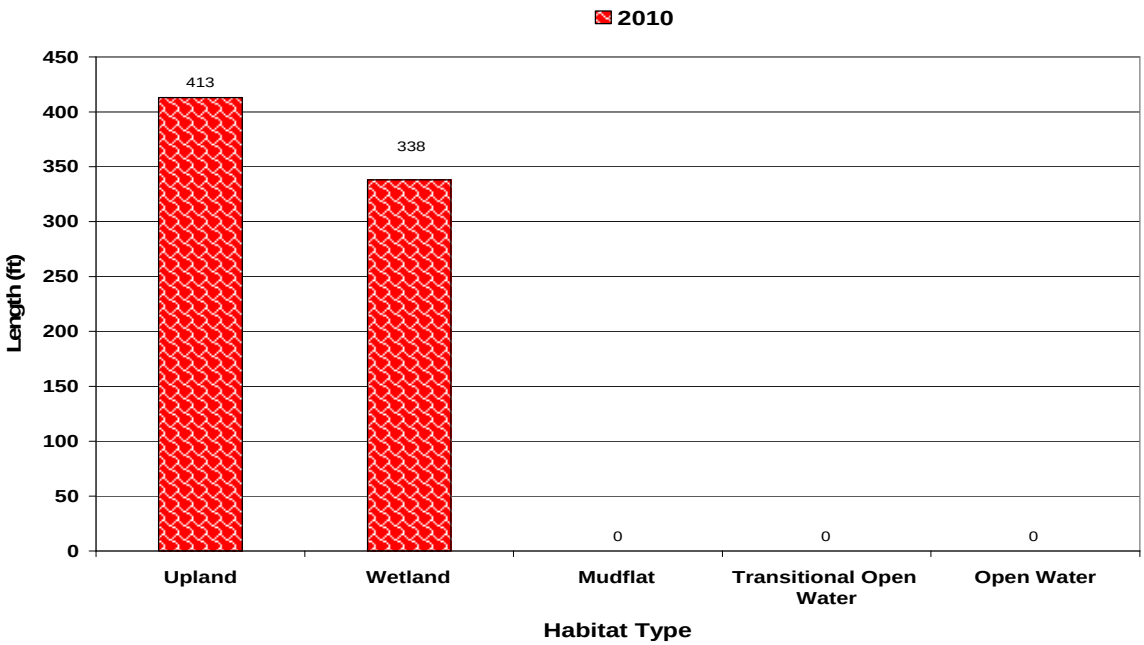


Chart 6. Length of habitat types within Transect 3 in 2010 at Easton Ranch.

3.3. Soil

The project site was mapped in the Park County Soil Survey (USDA 2010) within the Meadowcreek, rarely flooded-Nesda complex, found on 0 to 2 percent slopes (155A). The Meadowcreek series is a somewhat poorly drained clay loam soil mapped on floodplains in valleys. The soil survey classifies the soil as non-hydric although the taxonomy is a frigid Fluvaquentic Haplustolls. The Nesda loam (600B) is mapped in a small area at the south end of the project. The loam is a well-drained, non-hydric frigid Fluventic Haplustolls.

Soil test pits were excavated at four locations, all within the Meadowcreek series (E-1 through E-4, Figure 2**,** Appendix A). Data point E-1 was located in upland north of community 3. Soil pit E-2 was located within the pre-existing emergent wetland community 3. Data point E-3 was located in the existing forested wetland characterized by community 5. Data point E-4 was located in the newly excavated wetland at the boundary of the Type 6 *Beckmannia* wetland and transitional open water (Appendix D). The soil profile at E-1 revealed a dry friable clay loam (10YR 4/2) without any hydric soil indicators. The soil at E-2 was identified as a clay loam (10 YR 2/1) with redoximorphic depletions (10 YR 4/3) located within the matrix. The redox dark surface provided a positive indication of a hydric soil. Data point E-3 revealed a silty clay loam (10 YR 2/2) with redox concentrations (10 YR 3/4) in the matrix. The hydric soil indicator was a redox dark surface. The soil profile at E-4 was a very dark grayish brown silt loam (10 YR/3/2) with redox concentrations (10 YR 4/3) in the depleted matrix

providing a positive indication of hydric soil. The soil textures in the test pits generally correlated with the map unit.

3.4. Wetland Delineation

Four data points were used to define the vegetation, soil, and hydrology of site wetlands (E-1 to E-4, Figure 2, Appendix A and USACE Wetland Forms, Appendix B). Data point E-1 was located in upland community 1 and data points E-2 through E-4 were located in areas that met the wetland criteria. The total wetland acreage, including pre-existing wetland, was 11.53 acres. The August 24, 2010, delineation identified and mapped 1.10 acres of pre-existing emergent and shrub/scrub wetland within the mitigation boundaries (Figure 3, Appendix A). The pre-existing wetlands were originally defined during the baseline investigation completed in August 2001 (MDT 2008). The net wetland acreage of 10.43 includes 1.45 acres of the re-established flood channel (Community 6, Figure 3, Appendix A). An undisturbed upland buffer of 6.43 acres was maintained within the mitigation site.

Table 6. Total wetland acres delineated in August 2010 at Easton Ranch.

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

3.5. Wildlife

A comprehensive list of bird and other wildlife species observed directly or indirectly during the 2010 monitoring visit is presented in Table 8 (Appendix B)**.** Seventeen bird species were observed directly during the first monitoring event including bald eagle, eastern kingbird, gray catbird, lesser yellowlegs, northern flicker, sandhill crane, yellow warbler, American goldfinch, bank swallow, cedar waxwing, golden eagle, killdeer, mourning dove, northern harrier, and tree swallow. White-tailed deer, Richardson's ground squirrel, and raccoon were viewed onsite. Moose and raccoon tracks were noted. Reptile and amphibians observed included Columbia spotted frog and plains gartersnake.

Table 7. Wildlife species observed within Easton Ranch Mitigation Site in 2010.

COMMON NAME	SCIENTIFIC NAME
AMPHIBIAN	
Columbia spotted frog	*Rana luteiventris*
BIRD	
American Crow	*Corvus brachyrhynchos*
American Goldfinch	*Spinus tristus*
AMERICAN ROBIN	***Turdus migratorius***
AMERICAN WIGEON	***Anas americana***
Bald Eagle	*Haliaeetus leucocephalus*
Bank Swallow	*Riparia riparia*
Black-billed Magpie	*Pica hudsonia*
CANADA GOOSE	***Branta canadensis***
Cedar Waxwing	*Bombycilla cedrorum*
Eastern Kingbird	*Tyrannus tyrannus*
Golden Eagle	*Aquila chrysaetos*

Species identified by in 2010 by MDT are listed in **CAPS**.

Table 8. (Continued). Wildlife species observed within Easton Ranch Mitigation Site in 2010.

COMMON NAME	SCIENTIFIC NAME
BIRD	
Gray Catbird	*Dumetella carolinensis*
GREAT HORNED OWL	***Bubo virginianus***
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*
Sandhill Crane	*Grus canadensis*
SPOTTED SANDPIPER	***Actitis macularius***
Tree Swallow	*Tachycineta bicolor*
WILLET	***Tringa semipalmata***
Yellow Warbler	*Dendroica petechia*
MAMMAL	
Moose	*Alces americanus*
Raccoon	*Procyon lotor*
Richardson's Ground Squirrel	*Spermophilus richardsonii*
STRIPED SKUNK	***Mephitis mephitis***
White-tailed Deer	*Odocoileus virginianus*
REPTILE	
Plains Gartersnake	*Thamnophis radix*

Species identified by in 2010 by MDT are listed in **CAPS**.

3.6. Functional Assessment

This is the first year monitoring at this site and will serve as the baseline for functional assessments for comparison. The initial functional assessments of the existing emergent and shrub-scrub wetlands and constructed wetland cells and channel were completed as a baseline analysis in 2010 using the 2008 MDT Montana Wetland Assessment Method (Berglund and McEldowney 2008) (Appendix B). The project was separated into three assessment areas (AA). The Creation AA encompassed 8.98 acres of constructed palustrine, emergent wetland cells. The Restoration AA consisted of 1.45-acres of re-established relic flood channel that currently meets the wetland criteria. Approximately 1.56 acres of restoration credit was originally projected for the flood channel at a 1:1 credit ratio. The 1.1-acre Preservation AA encompassed the existing shrub/scrub and palustrine emergent wetland.

The Creation AA was rated as a Category III wetland with 52.5 percent of the total possible points. The ratings were high for short and long term surface water storage and groundwater discharge/recharge and moderate for general wildlife

habitat, flood attenuation, sediment/nutrient/toxicant removal, and production export/food chain support. Ratings for this wetland area are expected to improve as the site transitions from high to low disturbance and continues to develop wetland habitat. The Restoration AA received a Category III rating with 49.5 percent of the total possible points. Ratings were high for groundwater discharge/recharge and moderate for flood attenuation, short and long term surface water storage, sediment/nutrient/toxicant removal, and production export/food chain support. The existing wetland within the Preservation AA was rated as a Category II with 73.9 percent of the total possible. The presence of emergent, scrub/shrub, and forested wetlands types increased structural diversity ratings. Ratings were excellent for flood attenuation and high for general wildlife habitat, short and long term surface water storage, sediment/nutrient/toxicant removal, and groundwater discharge/recharge.

3.7. Photo Documentation

Photographs taken at photo points one through seven (PP1 through PP7; Figure 2, Appendix A) are shown on pages C-1 and C-2 of Appendix C**.** Panoramas of photo points PP-1 to PP-5 are included on pages C-4 and C-5 of Appendix C. Transect end points are shown on pages C-2 and C-3 of Appendix C**.**

3.8. Maintenance Needs

The diversion structure was closed during the August investigation. No man-made nesting structures were installed at the site. No maintenance is required on site structures. Eight separate infestations of Canada thistle were identified in uplands north of Type 3 and in the southwest corner of the project. Canada thistle is a Priority 2B noxious weed. The established weed management plan should continue to be implemented to prevent encroachment into the constructed wetland areas.

3.9. Current Credit Summary

Proposed mitigation included the creation of 24.95 acres of emergent, marsh, and shrub/scrub wetlands. Approximately 18.37 acres were designed to be emergent wetlands with water depths ranging from 0 to 1 foot. Up to 2.39 acres were designed to be emergent wetlands with 1- to 2-foot depths. Approximately 1.10 acres of pre-existing wetland were to be preserved and 6.43 acres of upland buffer were to be maintained.

Table 9 summarizes the current wetland credits based on the USACE approved credit ratios (MDT 2008) and the wetland delineation completed in August 2010. Approximately 7.78 acres of wetland developed within the constructed cells and 1.45 acres of wetland developed in the restored channel. The pre-existing wetland encompassed 1.1 acres. The upland buffer encompassed 6.43 acres. A 1.01-acre area of transitional open water currently devoid of vegetation was identified near the north and east boundaries of the site.

Table 9. Functions and Values of Easton Ranch Wetlands.

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

Table 10. Summary of wetland credits as of 2010.

Proposed Mitigation Features	Compensatory Mitigation Type	COE Mitigation Ratios	Final Credit Acreages	Proposed Final Wetland Credits (Acres)	2010 Credit Acreages	2010 Wetland Credits (Acres)
Creation of palustrine emergent wetland via shallow excavation.	Creation	1:1	24.95	24.95	7.78	7.78
Re-establishment of relic flood channel.	Restoration (Re-establishment)	1:1	1.56	1.56	1.45	1.45
Preservation of existing shrub/scrub and palustrine emergent wetland.	Preservation	4:1	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
Project Impacts			-0.67	-0.67	-0.67	-0.67
Total				27.40		10.12

4. REFERENCES

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Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

Figure 2: 2010 Monitoring Activity Locations

N

0 125 250 500

Feet

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

Legend

- Vegetation Transect
- Monitoring Limits
- DataPoints
- PhotoPoints

Base Photography Date: July 17, 2010

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 THAT THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Park Co., MT

PROJECT NO: NH-STPP 5(39)

FILE: DHRanch/Monitor2010.mxd

Project Name: Easton Ranch Wetland Mitigation

Drawing Title: 2010 Monitoring Activity Locations

DRAWN	CHECKED	APPROVED
BCS	XXX	XXX

SCALE: Noted

Drawn: September 10, 2010

PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 2

REV -

Figure 3: 2010 Mapped Site Features

N

0 125 250 500

Feet

Legend

Monitoring Limits

Wetland Limits

Vegetation Communities

Base Photography Date: July 17, 2010

Noxious Weeds

Cirsium arvense

Infestation SIze

X = <0.1 acre

▲= 0.1 to 1 acre

■= 1 to 5 acre

Cover Class

T = Trace (<1% cover)

L = Low (1-5% cover(

M = Moderate (5-25% cover)

H = High (25-100% cover)

Vegetation Community Types

1. Phleum pratense/Poa pratensis
2. Chenopodium spp/Phleum pratense
3. Carex spp.
4. Salix drummondiana/Carex spp.
5. Populus angustifolia
6. Beckmania syzigachne

Acreages

Uplands	22.17 acres
Gross Wetlands	11.53 acres
Transitional Open Water (7)	1.01 acres
Pre-existing wetland	1.10 acres
Net Wetland	10.43 acres

*No water diverted into constructed cells as of 8/25/2010

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 THAT THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

LOCATION: Park Co., MT

PROJECT NO: NH-STPP 5(39)

FILE: DHRanch/Veg2010.mxd

Project Name: Easton Ranch Wetland Mitigation

Drawing Title: 2010 Mapped Site Features

DRAWN	CHECKED	APPROVED
BS	BV	JL

SCALE: Noted

Drawn: September 10, 2010

PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

REV -

Appendix B

2010 Wetland Mitigation Site Monitoring Form
2010 USACE Wetland Delineation Form
2010 MDT Functional Assessment Form

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Easton Assessment Date/Time 8/25/2010 9:24:46 AM

Person(s) conducting the assessment: B. Sandefur

Weather: Clear, sunny, hot Location: Easton Ranch Mitigation Site

MDT District: Butte Milepost: 0

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

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

Size of Evaluation Area: 34 (acres)

Land use surrounding wetland:

agricultural, hay pasture; undeveloped riverine

HYDROLOGY

Surface Water Source: High groundwater, overflow floodplain Shields River

Inundation: ☑ Average Depth: 0.8 **(ft)** Range of Depths: 0-1.5 **(ft)**

Percent of assessment area under inundation: 5 %

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

Groundwater Monitoring Wells

Record depth of water surface below ground

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:

Irrigation diversion at top of wetland cells closed; drier than expected conditions throughout this first growing season.

VEGETATION COMMUNITIES

Site Easton

(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

Species	Cover class	Species	Cover class
Agropyron repens	2	Agrostis stolonifera	2
Brassica kaber	1	Bromus inermis	2
Bromus japonicus	1	Calamagrostis canadensis	1
Carum carvi	1	Dactylis glomerata	1
Helianthus annuus	1	Phleum pratense	3
Poa pratensis	3	Populus tremula	1
Rhamnus alnifolia	0	Trifolium repens	1

Comments:

Community # 2 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Brassica kaber	1	Bromus japonicus	1
Bromus marginatus	1	Carum carvi	1
Chenopodium album	2	Chenopodium leptophyllum	2
Cirsium arvense	1	Cirsium vulgare	1
Convolvulus arvensis	1	Descurainia sophia	1
Equisetum arvense	0	Equisetum hyemale	0
Lappula occidentalis	1	Lycopus asper	1
Phleum pratense	2	Sisymbrium altissimum	1
Taraxacum officinale	1	Thlaspi arvense	1
Trifolium pratense	1		

Comments:

Community # 3 **Community Type:** Carex spp /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	1	Carex aquatilis	2
Carex nebrascensis	2	Carex rostrata	4
Cirsium arvense	1	Glyceria striata	1
Juncus tenuis	1	Lycopus asper	1
Mentha arvensis	1	Plantago major	1
Salix exigua	2	Scirpus microcarpus	1
Scirpus pallidus	1		

Comments:

Community # 4 Community Type: Salix drummondiana / Carex spp

Species	Cover class	Species	Cover class
Alopecurus geniculatus	1	Beckmannia syzigachne	2
Carex nebrascensis	3	Carex praegracilis	2
Epilobium ciliatum	1	Glyceria grandis	2
Mentha arvensis	1	Phalaris arundinacea	2
Salix drummondiana	3	Scirpus microcarpus	2

Comments:

Community # 5 Community Type: Populus angustifolia /

Species	Cover class	Species	Cover class
Agrostis stolonifera	2	Beckmannia syzigachne	1
Carex aquatilis	1	Carex rostrata	1
Cirsium arvense	1	Glyceria grandis	3
Lycopus asper	1	Mentha arvensis	1
Phleum pratense	2	Populus angustifolia	5
Scirpus microcarpus	1		

Comments:

Community # 6 Community Type: Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Alisma gramineum	2
Beckmannia syzigachne	3	Epilobium ciliatum	1
Juncus bufonius	1	Juncus effusus	1
Plantago major	1	Typha latifolia	2

Comments:

Community # 7 Community Type: Transitional Open Water /

Species	Cover class	Species	Cover class
Alisma gramineum	0	Carex rostrata	0
Transitional Open Water	5		

Comments:

VEGETATION TRANSECTS

Site: Easton Date: 25/2010 9:24:46 AM

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

Interval Data:

Ending Station 52 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Bare Ground	4	Brassica kaber	3
Bromus japonicus	1	Carum carvi	1
Chenopodium album	2	Melilotus officinalis	1
Phleum pratense	2	Plantago major	1
Stellaria graminea	0	Taraxacum officinale	1
Thlaspi arvense	1	Trifolium pratense	1

Ending Station 70 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Bare Ground	4	Beckmannia syzigachne	4
Juncus bufonius	1		

Ending Station 97 **Community Type:** Transitional open water /

Species	Cover class	Species	Cover class
Shallow Water	5		

Ending Station 128 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Alisma gramineum	1	Bare Ground	3
Beckmannia syzigachne	4		

Ending Station 195 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Brassica kaber	1	Carum carvi	1
Chenopodium album	2	Convolvulus arvensis	1
Helianthus annuus	1	Phleum pratense	4
Poa pratensis	2	Thlaspi arvense	1

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

Species	Cover class	Species	Cover class
Bare Ground	5	Beckmannia syzigachne	4
Juncus bufonius	1	Melilotus officinalis	1
Phleum pratense	1	Triglochin maritimum	1
Typha latifolia	1		

Ending Station 471 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Alopecurus geniculatus	1	Bare Ground	3
Beckmannia syzigachne	1	Carum carvi	1
Chenopodium album	2	Cirsium arvense	0
Lycopus asper	1	Melilotus officinalis	1
Mimulus guttatus	0	Phleum pratense	1
Plantago major	1	Taraxacum officinale	1
Trifolium pratense	1		

Ending Station 496 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Bare Ground	4	Beckmannia syzigachne	4
Chenopodium album	1	Juncus bufonius	1
Phleum pratense	2	Trifolium repens	1

Ending Station 547 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Agrostis stolonifera	2	Brassica kaber	1
Carum carvi	1	Chenopodium album	1
Cirsium arvense	1	Melilotus officinalis	2
Phleum pratense	5	Poa pratensis	2
Thlaspi arvense	1		

Ending Station 703 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	4	Carum carvi	2
Plantago major	1	Rumex crispus	1
Taraxacum officinale	1	Trifolium pratense	1

Ending Station 1032 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Amaranthus retroflexus	0	Bromus marginatus	1
Carum carvi	1	Chenopodium album	2
Cirsium arvense	0	Convolvulus arvensis	0
Descurainia sophia	0	Equisetum arvense	0
Equisetum hyemale	0	Melilotus officinalis	1
Phleum pratense	3	Thlaspi arvense	1
Trifolium repens	1		

Ending Station 1072 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus inermis	3	Cirsium arvense	0
Phleum pratense	5		

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

Interval Data:

Ending Station 17 **Community Type:** Carex spp /

Species	Cover class	Species	Cover class
Agrostis stolonifera	2	Carex nebrascensis	3
Carex rostrata	5	Salix exigua	1
Scirpus microcarpus	1		

Ending Station 44 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Agrostis stolonifera	2	Phleum pratense	5
Plantago major	1	Poa pratensis	2
Trifolium pratense	1		

Ending Station 59 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Bare Ground	4	Beckmannia syzigachne	3
Juncus bufonius	1	Salix drummondiana	0
Typha latifolia	1		

Ending Station 118 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus marginatus	1	Chenopodium album	1
Cirsium vulgare	1	Lycopus asper	1
Melilotus officinalis	2	Phleum pratense	5
Thlaspi arvense	1	Trifolium pratense	1
Trifolium repens	1		

Ending Station 172 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agrostis stolonifera	2	Beckmannia syzigachne	5
Juncus bufonius	1	Salix drummondiana	0

Ending Station 298 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Brassica kaber	2	Carum carvi	2
Chenopodium album	1	Chenopodium leptophyllum	2
Phleum pratense	3	Thlaspi arvense	1
Trifolium pratense	2		

Ending Station 328 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Bare Ground	2	Beckmannia syzigachne	3
Bromus marginatus	1	Thlaspi arvense	1

Ending Station 380 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Cirsium arvense	1	Phleum pratense	4
Poa pratensis	3		

Ending Station 885 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Brassica kaber	1	Bromus inermis	1
Carum carvi	1	Chenopodium album	2
Cirsium arvense	1	Cirsium vulgare	0
Equisetum hyemale	0	Helianthus annuus	0
Melilotus officinalis	1	Phleum pratense	2
Plantago major	1	Thlaspi arvense	1
Trifolium pratense	2		

Ending Station 1285 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Agrostis stolonifera	1	Bare Ground	2
Beckmannia syzigachne	4	Carum carvi	1
Cirsium arvense	0	Convolvulus arvensis	0
Cornus stolonifera	0	Juncus bufonius	1
Melilotus officinalis	1	Mimulus guttatus	0
Plantago major	1	Polypogon monspeliensis	0
Potentilla gracilis	0	Taraxacum officinale	1

Ending Station 1321 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Agropyron repens	1	Bare Ground	5
Brassica kaber	1	Chenopodium album	1
Chenopodium leptophyllum	1	Phleum pratense	1
Thlaspi arvense	1	Trifolium repens	1

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

Species	Cover class	Species	Cover class
Achillea millefolium	1	Bromus inermis	5
Phleum pratense	2	Poa pratensis	2
Thlaspi arvense	1		

Transect Notes:

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

Interval Data:

Ending Station 53 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Bromus inermis	4	Equisetum arvense	1
Phleum pratense	5	Poa pratensis	2
Trifolium pratense	1		

Ending Station 177 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Bare Ground	4	Brassica kaber	2
Bromus ciliatus	1	Carum carvi	1
Chenopodium album	2	Equisetum hyemale	1
Phleum pratense	2	Taraxacum officinale	1
Thlaspi arvense	1		

Ending Station 208 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Bare Ground	4	Beckmannia syzigachne	4
Brassica kaber	1	Phleum pratense	1

Ending Station 250 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Alnus incana	0	Bare Ground	3
Brassica kaber	1	Carum carvi	1
Chenopodium album	2	Helianthus annuus	1
Melilotus officinalis	2	Phleum pratense	2
Thlaspi arvense	1	Trifolium pratense	2

Ending Station 270 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Brassica kaber	1	Carum carvi	1
Chenopodium album	1	Medicago lupulina	1
Phleum pratense	2	Poa pratensis	2
Taraxacum officinale	1	Thlaspi arvense	3

Ending Station 284 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Bare Ground	4	Beckmannia syzigachne	3
Carum carvi	1	Salix exigua	0
Thlaspi arvense	1		

Ending Station 345 **Community Type:** Phleum pratense / Poa pratensis

Species	Cover class	Species	Cover class
Carum carvi	3	Chenopodium album	1
Helianthus annuus	1	Phleum pratense	5
Poa pratensis	2	Taraxacum officinale	1
Thlaspi arvense	1	Trifolium pratense	2

Ending Station 374 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Bare Ground	2	Brassica kaber	2
Carum carvi	2	Chenopodium album	2
Chenopodium leptophyllum	1	Melilotus officinalis	2
Phleum pratense	2		

Ending Station 447 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Beckmannia syzigachne	5	Carum carvi	1
Juncus bufonius	1	Trifolium pratense	2

Ending Station 490 **Community Type:** Chenopodium spp / Phleum pratense

Species	Cover class	Species	Cover class
Bare Ground	3	Brassica kaber	1
Carum carvi	1	Chenopodium album	1
Phleum pratense	2	Plantago major	1
Trifolium pratense	2	Trifolium repens	1

Ending Station 710 **Community Type:** Beckmannia syzigachne /

Species	Cover class	Species	Cover class
Bare Ground	2	Beckmannia syzigachne	4
Brassica kaber	1	Carum carvi	1
Chenopodium album	1	Equisetum hyemale	1
Juncus bufonius	1	Melilotus officinalis	1
Plantago major	1	Trifolium pratense	2

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

Species	Cover class	Species	Cover class
Agrostis stolonifera	2	Bromus inermis	2
Carum carvi	1	Cirsium arvense	0
Phleum pratense	5	Poa pratensis	3
Trifolium pratense	2	Trifolium repens	1

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Easton

Planting Type	#Planted	#Alive	Notes
Red-osier dogwood	250		Good survival, most observed supported green leaves
Sandbar Willow	250		High percent survival (>80%)
Thinleaf alder	500		Survival approx 75% of observed plantings
Willow cuttings	200		Greater than 80% observed were leafed out and survivin

Comments

No systematic sampling method was employed in evaluating planted woody vegetation survival.

Easton

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: Bluebird boxes

How many? _____

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Crow	3	L	
American Goldfinch	2		
Bald Eagle	2		
Bank Swallow	3		
Black-billed Magpie	2	L	
Cedar Waxwing	1		FO
Eastern Kingbird	1		SS
Golden Eagle	1	FO	
Gray Catbird	2	L	SS
Killdeer	13		MF
Lesser Yellowlegs	1		MF
Mourning Dove	2	FO	
Northern Flicker	1		
Northern Harrier	1	FO	
Sandhill Crane	3	FO	
Tree Swallow	6		
Yellow Warbler	2		SS

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
Columbia Spotted Frog	6	No	No	No	
Moose		Yes	No	No	
Plains Gartersnake	1	No	No	No	
Raccoon		Yes	No	No	
Richardson's Ground Squirrel		No	No	No	
Striped Skunk		No	No	No	
White-tailed Deer	3	No	No	No	

Wildlife Comments:

Easton

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
6282			190	pp1
6285			250	pp1
6288			300	pp1
6292			200	pp2, 6292-95
6298			140	pp3, 6298-6302
6306			170	pp4a, Shields River bank
6310			20	pp4b, Shields River bank
6313			105	pp5, 6313-6319, 30-180 deg
6320			0	pp6, 6320-6323
6331			340	pp7, 6331-6336, 340-110 deg
6340			5	Veg tran 1, start
6346			185	Veg tran 1, end
6347			180	Veg tran 2, start
6348			0	Veg tran 2, end
6350			95	Veg tran 3, start
6351			265	Veg tran 3, end

Comments:

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 working properly and in good working order? Yes

If no, describe the problems below.

No repair needs identified

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

Project/Site: Easton City/County: Park Sampling Date: 8/25/2010

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.): Flat Local relief (concave, convex, none): rolling Slope (%):

Subregion (LRR): LRR E Lat: 46.0610216666667 Long: -110.638726666667 Datum: WGS 84

Soil Map Unit Name: NWI classification:

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Populus tremula ssp. tremuloides	10	☐	FAC+
2. Poa pratensis	40	☑	FACU+
3. Phleum pratense	25	☑	FACU
4. Trifolium pratense	20	☐	FACU
5. Agrostis stolonifera	20	☐	FAC+
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	115 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	85	x 4 =	340
UPL species	0	x 5 =	0
Column Totals:	115 (A)		430 (B)

Prevalence Index = B/A = 3.73913

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:
0

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
0-3	10YR 3/2	100					Silt Loam	Many fine roots
3-12	10YR 4/2	100					Clay Loam	Dry, friable

[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 indicators

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

Project/Site: Easton City/County: Park Sampling Date: 8/25/2010

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.): Flat Local relief (concave, convex, none): rolling Slope (%): 0

Subregion (LRR): LRR E Lat: 46.0610966666667 Long: -110.639068333333 Datum: WGS 84

Soil Map Unit Name: NWI classification:

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Carex rostrata var utriculata	60	☑	OBL
2. Carex aquatilis	10	☐	OBL
3. Scirpus maritimus	15	☐	OBL
4. Scirpus pungens	5	☐	OBL
5. Salix exigua	10	☐	OBL
6. Glyceria striata	10	☐	OBL
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	110 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	110 x 1 =	110
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	0 x 4 =	0
UPL species	0 x 5 =	0
Column Totals:	110 (A)	110 (B)

Prevalence Index = B/A = 1

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
0-12	10YR 2/1	95	10YR 4/3	5	D	M	Clay Loam	

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

Hydric Soil Indicators: (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 | City/County: Park | Sampling Date: 8/25/2010

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.): Flat | Local relief (concave, convex, none): rolling | Slope (%): 0

Subregion (LRR): LRR E | Lat: 46.0562116666667 | Long: -110.64013 | Datum: WGS 84

Soil Map Unit Name: | NWI classification:

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiandra	25	☑	FACW+
2. Populus angustifolia	65	☑	FACW
3. 0	0	☐	0
4. 0	0	☐	0
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. Glyceria striata	65	☑	OBL
2. Mentha arvensis	10	☐	FAC
3. Carex rostrata var utriculata	20	☐	OBL
4. Poa palustris	15	☐	FAC
5. 0	0	☐	0
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	110	= Total Cover	
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species	90	x 2 =	180
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	200 (A)		340 (B)

Prevalence Index = B/A = 1.7

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:
0

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 2/1	100					Silt Loam	
6-12	10YR 2/2	95	10YR 3/4	5	C	M	Silty Clay Loam	

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

Hydric Soil Indicators: (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): 8

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

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

Project/Site: Easton City/County: Park Sampling Date: 8/25/2010

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.): Flat Local relief (concave, convex, none): rolling Slope (%): 0

Subregion (LRR): LRR E Lat: 46.055675 Long: -110.638881666667 Datum: WGS 84

Soil Map Unit Name: NWI classification:

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 0)	Absolute % Cover	Dominant Species?	Indicator Status
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
3. 0	0	☐	0
4. 0	0	☐	0
5. 0	0	☐	0
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Typha latifolia	20	☑	OBL
2. Eleocharis palustris	5	☐	OBL
3. Beckmannia syzigachne	20	☑	OBL
4. Alisma gramineum	15	☑	OBL
5. 0	0	☐	0
6. 0	0	☐	0
7. 0	0	☐	0
8. 0	0	☐	0
9. 0	0	☐	0
10. 0	0	☐	0
11. 0	0	☐	0
	60 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. 0	0	☐	0
2. 0	0	☐	0
	0 = Total Cover		

% Bare Ground in Herb Stratum 40

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = 1

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:
0

SOIL

Sampling Point: E-4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	95	10YR 5/2	5	C		Silt Loam	
4-11	10YR 3/2	95	10YR 4/3	5	C	M		

[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): 10

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 2

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

MDT Montana Wetland Assessment Form (revised March 2008)

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

3. Evaluation Date 8/25/2010 **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

Watershed Upper Shields River, Upper Yell **County** Park Co.

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 8.98

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 8.98

☐ **Mitigation Wetlands: pre-construction**

How assessed: Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Emergent Wetland	Excavated	Seasonal/Intermittant	80
Depressional	Emergent Wetland	Excavated	Permanent/Perennial	20

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)

This is the first baseline monitoring as the site construction was completed in May 2010. Disturbance from recent excavation to create wetland complex.

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

Cirsium arvense

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

AA includes constructed wetland complex that has developed wetland characteristics. Surrounding land use inlcudes activities associated with a working ranch. Shields River bounds the project area to the west.

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:

SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT

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

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

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

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☑ S

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

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

Sources for documented use USF&WS

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 Bald Eagle (S3)

Incidental habitat (list species) ◉ D ◯ S Golden Eagle

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 MT NHP, bald eagle nest very close to site

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

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** _____

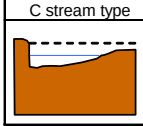
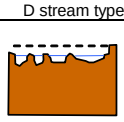
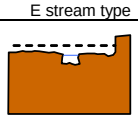
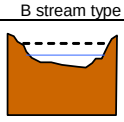
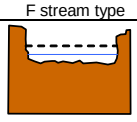
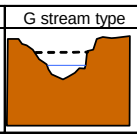
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating _____

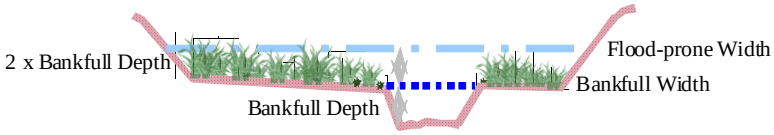
iii. Final Score and Rating: _____ **Comments:**

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 _____ **/** **Bankfull width** _____ **=** **Entrenchment ratio** _____

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: _____

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: _____

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

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

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

Comments:

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

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

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

Comments: Shoreline stabilization includes the perimeter around standing water

14I. Production Export/Food Chain Support:

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

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

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

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

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

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

Comments:

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

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

Comments:

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:

General Site Notes

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	5.388	☐
C. General Wildlife Habitat	M	.5	1	4.49	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.6	1	5.388	☑
F. Short and Long Term Surface Water Storage	H	.9	1	8.082	☑
G. Sediment/Nutrient/Toxicant Removal	M	.7	1	6.286	☑
H. Sediment/Shoreline Stabilization	L	.2	1	1.796	☐
I. Production Export/Food Chain Support	M	.5	1	4.49	☐
J. Groundwater Discharge/Recharge	H	1	1	8.98	☑
K. Uniqueness	L	.2	1	1.796	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.449	☐
Totals:		5.25	10	47.145	
Percent of Possible Score			**52.5** %		

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

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

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

☑

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

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

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

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

3. Evaluation Date 8/25/2010 **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

Watershed Upper Shields River, Upper Yell **County** Park Co.

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**

10. Classification of Wetland and Aquatic Habitats in AA

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

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

Cirsium arvense

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

AA includes pre-existing emergent (Carex), scrub/shrub (willow), and forested (cottonwood) wetlands. Surrounding land uses include recently constructed wetland complex, undisturbed wetlands outside of easement area, working ranch, and Shields River.

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:

SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT

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

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

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

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☑ S

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

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

Sources for documented use USF&WS

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 Bald Eagle

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☐ S

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

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
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 MT NHP, bald eagle nest close to mitigation site

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

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**

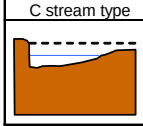
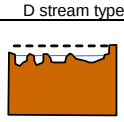
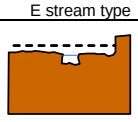
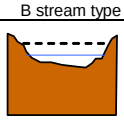
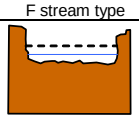
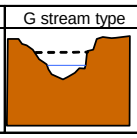
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

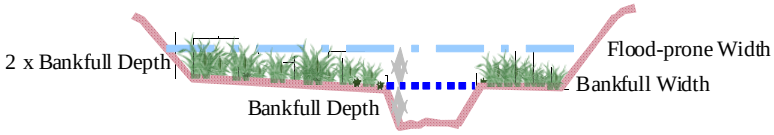
iii. Final Score and Rating: _____ **Comments:**

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 _____ **/** **Bankfull width** _____ **=** **Entrenchment ratio** _____

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

Comments: AA subject to flooding from adjacent 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:

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

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

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

Comments:

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

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

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.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	.9H	.6M	.7H	.4	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

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

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

Comments:

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

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

Comments:

14K. Uniqueness:

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

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

Comments:

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

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

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

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

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

Comments:

General Site Notes

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	0.66	☐
C. General Wildlife Habitat	H	.9	1	0.99	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	E	1	1	1.1	☐
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	M	.7	1	0.77	☐
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:		6.65	9	7.315	
Percent of Possible Score			**73.89** %		

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

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

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

☐

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

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

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008)

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

3. Evaluation Date 8/25/2010 **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

Watershed Upper Shields River, Upper Yell **County** Park Co.

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)

High disturbance result of recent excavation to construct flood channel and adjacent wetland complex.

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

Carum carvi

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

AA includes 1.45 acres of wetland within excavated flood channel. Surrounding land use primarily encompasses recently excavated wetland complex.

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:

SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT

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

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

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

Secondary habitat (list Species) ◉ D ◉ S

Incidental habitat (list species) ◉ D ◉ S

No usable habitat ☑ S

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

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

Sources for documented use USF&WS

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 Bald Eagle (S3)

Incidental habitat (list species) ○ D ◉ S Golden Eagle

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 MT NHP, bald eagle nest very close to site

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

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**

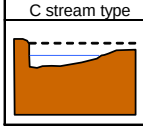
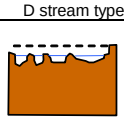
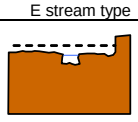
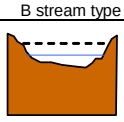
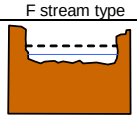
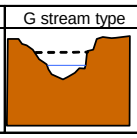
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

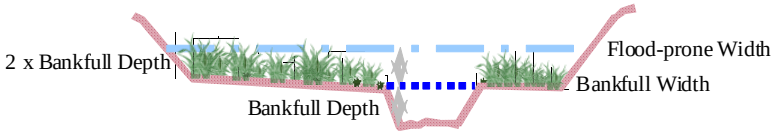
iii. Final Score and Rating: _____ **Comments:**

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 _____ **/** **Bankfull width** _____ **=** **Entrenchment ratio** _____

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:

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:

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

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

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

Comments:

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

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

*% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).*	*Duration of surface water adjacent to rooted vegetation*		
	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.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	.9H	.6M	.7H	.4	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7H	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

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

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

Comments:

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

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

Comments:

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:

General Site Notes

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	0.87	☐
C. General Wildlife Habitat	L	.3	1	0.435	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.5	1	0.725	☐
F. Short and Long Term Surface Water Storage	M	.6	1	0.87	☑
G. Sediment/Nutrient/Toxicant Removal	M	.6	1	0.87	☑
H. Sediment/Shoreline Stabilization	M	.6	1	0.87	☑
I. Production Export/Food Chain Support	M	.5	1	0.725	☐
J. Groundwater Discharge/Recharge	H	1	1	1.45	☑
K. Uniqueness	L	.2	1	0.29	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	0.0725	☐
Totals:		4.95	10	7.1775	
Percent of Possible Score			**49.5** %		

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

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

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

☑

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

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

I	II	III	IV

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Easton Ranch
Park County, Montana



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



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



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



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



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



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



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



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 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 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



Photo Point 2 – *Panorama*
Compass Bearing: 270-0 Degrees
Location: SE corner of site
Taken in 2010



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

Location: NW corner of site
Taken in 2010



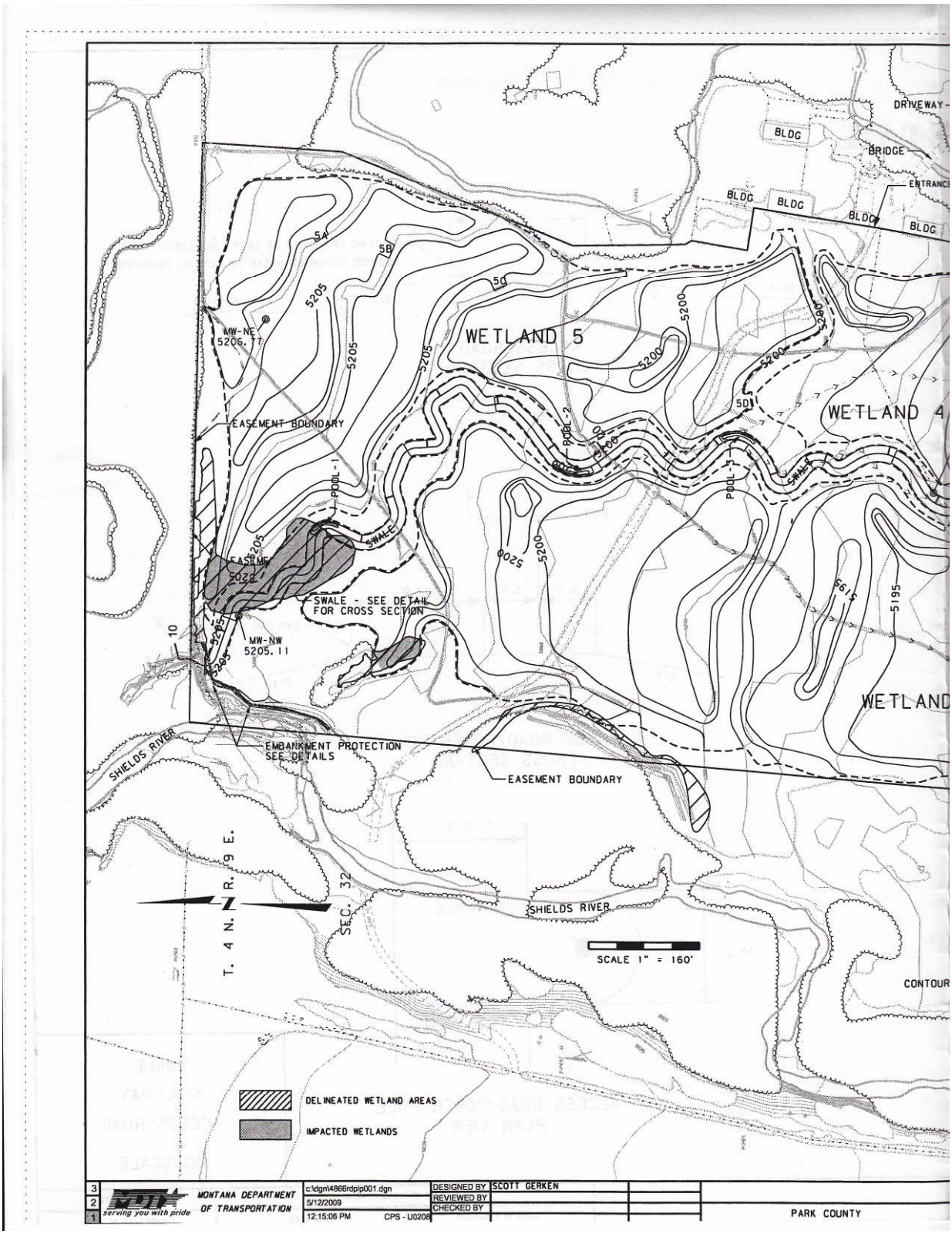
Photo Point 5 – *Panorama*
Compass Bearing: 30-180 Degrees

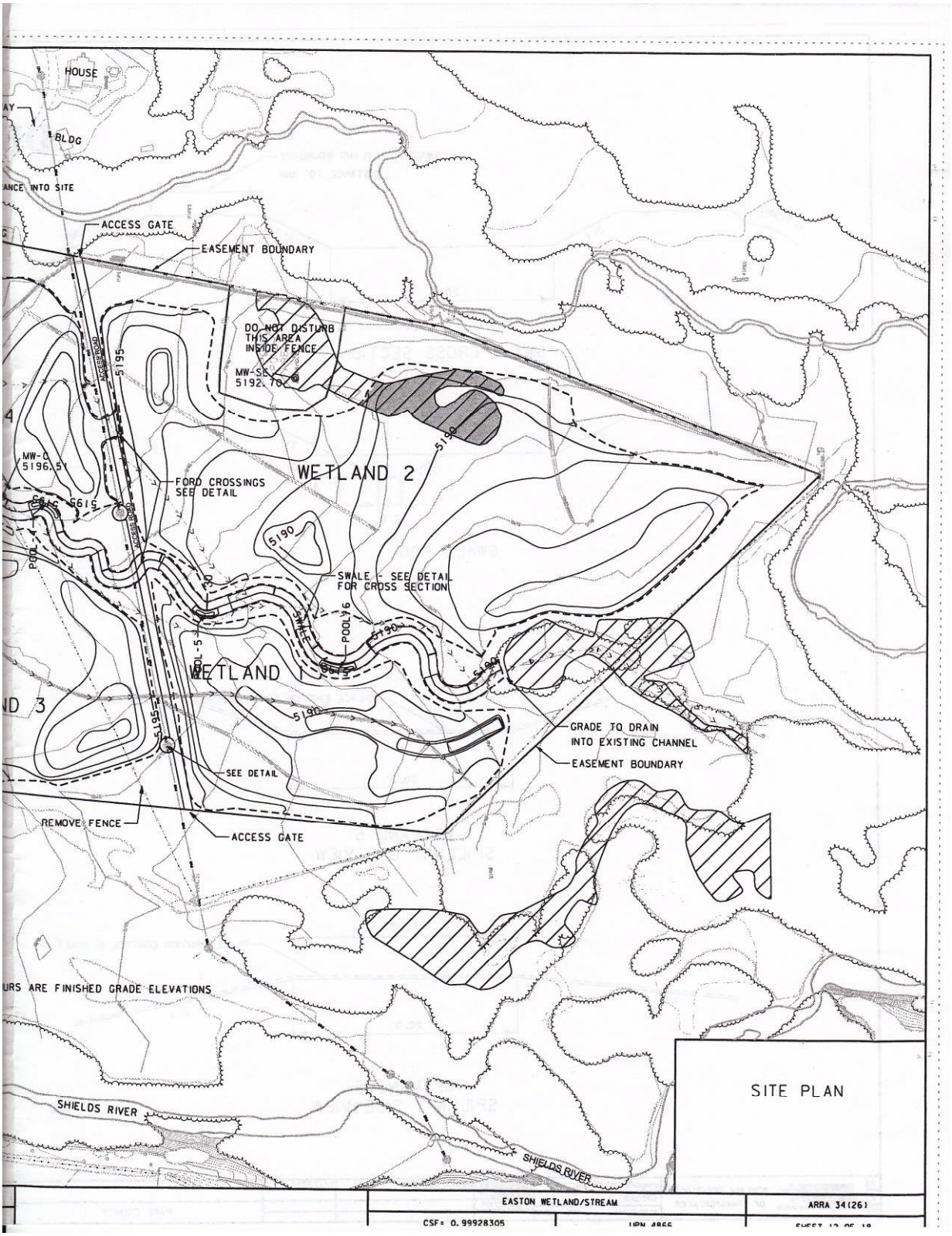
Location: Western boundary of site
Taken in 2010

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)