
MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2002

*Peterson Ranch
Hall, Montana*



Prepared for:

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

February 2003

Project No: 130091.010

Prepared by:

LAND & WATER CONSULTING, INC.
P.O. Box 8254
Missoula, MT 59807



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1.0 INTRODUCTION

The Peterson Ranch Wetland Mitigation Site was developed to mitigate wetland impacts associated with the Montana Department of Transportation (MDT) reconstruction of Highway 1 between Maxville and Drummond. The Peterson Ranch is located in Granite County, MDT Watershed # 2, in the Upper Clark Fork region. The mitigation site is located south and east of Hall, Montana (**Figure 1**). Elevation is approximately 4,200 feet with slight topographic variation throughout the project site. Turnstone Biological conducted the original wetland delineation for the Peterson Ranch proposed mitigation site in 1998.

The approximate mitigation boundary is illustrated on **Figure 2 (Appendix A)**, and the original site plans are included in **Appendix D**. The mitigation site boundary starts along the southern edge of Montana Highway 512. Fence lines are located on both the west and east sides of the mitigation site, running south. On the west side of the site, an older fence line is still in place, preventing livestock from grazing within the project boundary. On the east side, the fence line follows the parcel boundary that is adjacent to an active timber mill. The fence lines form a distinct perimeter, encompassing the newly created/enhanced wetlands. Electric fence is used to close off the southern most boundary of the mitigation site near the southern end of pond #1.

Seasonal flooding of Flint Creek and an irrigation- influenced shallow groundwater table provide the primary wetland hydrology. The local groundwater systems are also influenced by the adjacent Flint Creek and the movement of subsurface flow through the highly permeable alluvium substrate located within the floodplain of the Flint Creek Valley.

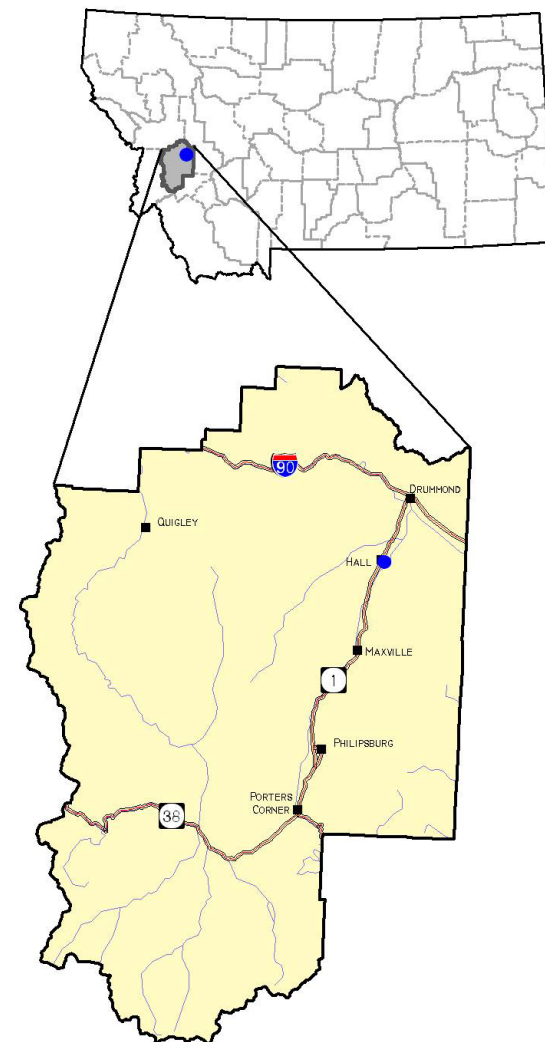
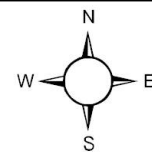
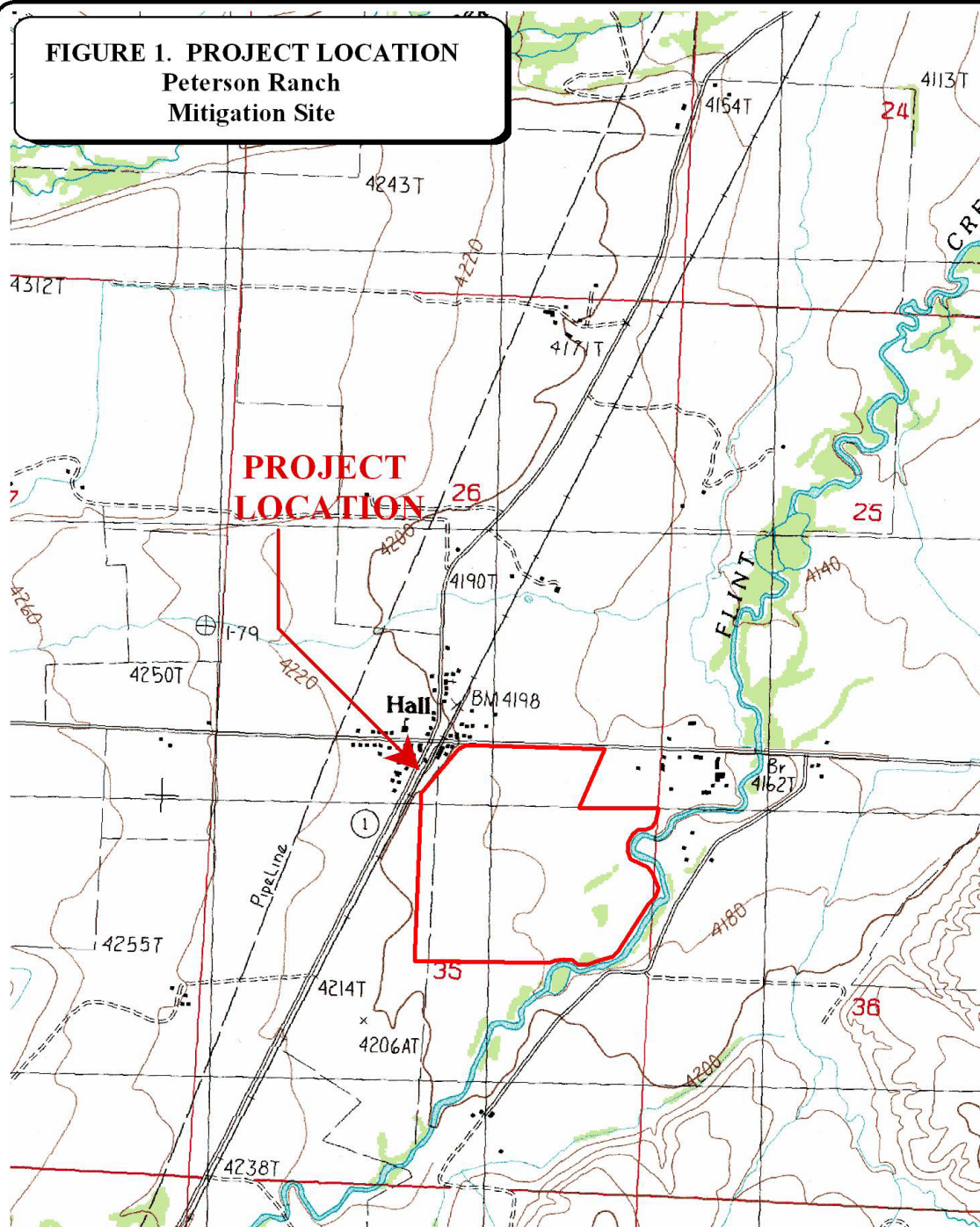
Project goals for the Peterson Ranch wetland mitigation site include the following:

- Creation of a protective easement.
- Creation of 17.5 acres of wetlands.
- Grazing management plan developed to enhance 80.6 acres.
- Enhancement of riparian vegetation through plantings and seeding.
- Creation of new wetlands with open water habitat.
- Improved functions and values ratings.

Construction was completed in the spring of 2002; diagrams are presented in **Appendix D**. Revegetation work was also completed in the spring of 2002; planting specifications are presented in **Appendix E**. The primary components of construction include:

- Construction of existing uplands into 8.2 acres of four shallow water pools and adjoining emergent wetlands.
- Construction of degraded wet meadow into 9.4 acres of shallow open water and emergent/scrub-shrub wetlands.

FIGURE 1. PROJECT LOCATION
Peterson Ranch
Mitigation Site



800 0 800 1600 FEET
 1: 24,000

PROJECT #: 130091.010
 DATE: DEC 2002
 LOCATION: HALL, MT
 PROJECT MANAGER: B. DUTTON
 DRAWN BY: B. STEINEBACH

LAND & WATER CONSULTING, INC.

1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

The site was designed to mitigate for specific wetland functions and values impacted by MDT roadway projects. These include riparian, wet meadow, emergent and open water wetland areas lost to MDT construction. Impacted functions include sediment and nutrient retention, water quality, groundwater recharge, and waterfowl/wildlife habitat.

The Peterson Ranch site will be monitored yearly over the 3-year contract period to document wetland and other biological attributes. The monitoring area is illustrated in **Figure 2 (Appendix A)**.

2.0 METHODS

2.1 Monitoring Dates and Activities

The site was visited on June 14th (early season), July 30 (mid-season) and November 21, 2002 (late season). The early season visit was conducted to document bird activity and to gather initial vegetation data. The mid-season visit was conducted to document the remaining vegetation, soil, and hydrologic conditions used to map jurisdictional wetlands. All information contained on the Wetland Mitigation Site Monitoring Form (**Appendix B**) was collected at this time. Activities and information conducted/collected included: wetland delineation; wetland/open water aquatic habitat boundary mapping; vegetation community mapping; vegetation transect; soils data; hydrology data; bird and general wildlife use; photograph points; macroinvertebrate sampling; GPS data points; functional assessment; and (non-engineering) examination of topographic features. The late season visit was of a reconnaissance nature to finalize miscellaneous mapping.

2.2 Hydrology

Wetland hydrology indicators were recorded during the mid-season visit using procedures outlined in the COE 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**). Additional hydrologic data were recorded on the mitigation site monitoring form (**Appendix B**). No groundwater monitoring wells were installed at the site.

2.3 Vegetation

General dominant species-based vegetation community types (e.g., *Eleocharis/Carex*) were delineated on an aerial photograph during the mid-season visit. Standardized community mapping was not employed as many of these systems are geared towards climax vegetation and do not reflect yearly changes. Estimated percent cover of the dominant species in each community type was listed on the site monitoring form (**Appendix B**).

Two 10-foot wide belt transects were established during the mid-season monitoring event to represent the range of current vegetation conditions. Percent cover was estimated for each vegetative species encountered within the “belt” using the following values: T (few plants); P (1-5%), 1 (5-15%); 2 (15-25%); 3 (25-35%); 4 (35-45%); 5 (45-55%) and so on to 9 (85-95%).

Percent cover was estimated for each vegetative species encountered. The transect locations are illustrated on **Figure 2 (Appendix A)**. The transects will be used to evaluate changes over time, especially the establishment and increase of hydrophytic vegetation. The transect locations were marked on the air photo and all data were recorded on the mitigation site monitoring form. Transect endpoint locations were recorded with the GPS unit. A photograph was taken from both ends of each transect looking along the transect path.

A comprehensive plant species list for the site was compiled and will be updated as new species are encountered. Ultimately, observations from past years will be compared with new data to document vegetation changes over time.

2.4 Soils

Soils were evaluated during the mid-season site visit using the hydric soils determination procedures outlined in the COE 1987 Wetland Delineation Manual. Soil data were recorded for each wetland determination point on the COE Routine Wetland Delineation Data Forms (**Appendix B**). The most current NRCS terminology was used to describe hydric soils (USDA 1998).

2.5 Wetland Delineation

Wetland delineation was conducted during the mid-season visit according to the 1987 COE Wetland Delineation Manual. Wetland and upland areas within the monitoring area were investigated for the presence of wetland hydrology, hydrophytic vegetation and hydric soils. The information was recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**). The wetland/upland boundary was delineated on the air photo and recorded with a resource grade GPS unit using the procedures outlined in **Appendix E**. The wetland/upland boundary in combination with the wetland/open water boundary was used to calculate the final wetland acreage.

2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations and other positive indicators of use, such as vocalizations, were recorded on the wetland monitoring form during site visits. Indirect use indicators, including tracks, scat, burrows, eggshells, skins, bones, etc. were also recorded. Observations were recorded as the observer traversed the site while conducting other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used.

2.7 Birds

Bird observations were also recorded during all three-site visits. No formal census plots, spot mapping, point counts, or strip transects were conducted. Observations were generally recorded incidental to other monitoring activities and were categorized by species, activity code, and general habitat association.

2.8 Macroinvertebrates

Macroinvertebrate samples were collected during the mid-season site visit at four separate locations (**Figure 2**). Macroinvertebrate sampling procedures are provided in **Appendix E**. Samples were preserved as outlined in the sampling procedure and sent to a laboratory for analysis.

2.9 Functional Assessment

Functional assessment forms were completed using the 1999 MDT Montana Wetland Assessment Method (**Appendix B**). Field data necessary for this assessment were collected during the mid-season visit. Turnstone Biological completed baseline functional assessment during the initial wetland delineation using the 1996 MDT Montana Wetland Field Evaluation Form.

2.10 Photographs

Photographs were taken illustrating current land uses surrounding the site, the upland buffer, the monitored area and the vegetation transects. Each photograph point location was recorded with a resource grade GPS. The location of photo points is shown on **Figure 2, Appendix A**. All photographs were taken using a 50 mm lens.

2.11 GPS Data

During the 2002 monitoring season, point data were collected with a resource grade GPS unit at the vegetation transect beginning and ending locations and at all photograph locations. Wetland boundaries were also recorded with a resource grade GPS unit. The method used to collect these points is described in the GPS protocol in **Appendix E**.

2.12 Maintenance Needs

Observations were made of existing structures and of erosion/sediment problems to identify maintenance needs. This did not constitute an engineering-level structural inspection, but rather a cursory examination. Current/future potential problems were documented on the monitoring form.

3.0 RESULTS

3.1 Hydrology

The main source of hydrology is seasonal flooding by Flint Creek. This mitigation site occurs in Flint Creek Valley floodplain consisting of areas of low topography, small side channels (irrigation ditches) and ponds. Another primary source of hydrology is the high groundwater table influenced by irrigation ditches and persistent upwelling and lateral movement of groundwater through the alluvial materials located throughout the floodplain.

Open water occurred across approximately 1.9 acres or 4% of the 48-acre mitigation site during the mid-season visit (**Figure 3**). Shallow open water ponds #1, 2, 3, 4 and 5 were constructed to depths of less than 6.6 feet. Emergent surrounding wetlands along the south end of pond #1 were inundated and draining into the open water. The outer fringes of ponds #3, 4, and 5 were also inundated and surrounded by more extensive emergent vegetation. Inundation was observed at approximately 50% of the wetland area on the site.

3.2 Vegetation

Sixty-eight plant species were identified at the site and are listed in **Table 1**. The majority of these species are herbaceous. Two general wetland types were identified; these include emergent and scrub-shrub/emergent wetlands. A few small shrub communities exist along an active side channel/irrigation ditch. Several mature black cottonwood (*Populus trichocarpa*) and aspen (*Populus tremuloides*) were also observed along the same side channel and its associated wet fringes. Most the site consists of open wet meadows and emergent wetland vegetation.

Seven wetland and one upland community type were identified at the mitigation site (**Figure 3, Appendix A**). The seven wetland community types include Type 1: *Agrostis*, Type 3: *Salix*, Type 4: *Eleocharis/Carex*, Type 5: *Carex/Typha*, Type 6: *Agrostis/Juncus*, Type 7: *Carex/Alopecurus* and Type 8: *Phleum/Agrostis*. The one upland community observed, Type 2: *Agropyron*, covers a vast majority of the mitigation site. Plant species observed within each of these communities are listed on the attached data form (**Appendix B**).

Type 4 is the wettest community and occurred as aquatic bed/emergent wetlands in the shallow waters of the created wetlands ponds # 4 and 5 (**Figure 3**). Type 4 is dominated by creeping spike rush (*Eleocharis palustris*), Nebraska sedge (*Carex nebrascensis*) and common cattail (*Typha latifolia*). Type 5 and 7 are the next wettest areas, consisting of emergent vegetation occurring in depressions and side channels throughout the wet meadow complexes. Type 5 and 7 are dominated by Nebraska sedge, common cattail, and meadow foxtail (*Alopecurus pratensis*).

Type 3 is the next wettest wetland type and is classified as scrub-shrub wetland. This area has mature shrub communities growing adjacent to the active side channel (irrigation ditch). Type 3's vegetation is dominated by Bebb's willow (*Salix bebbiana*), black cottonwood, Geyer willow (*Salix geyeriana*), and Swamp current (*Ribes aureum*). The remaining Types 1, 6, and 8 are the least wet areas. These areas function as the transitional zone between the wettest areas and drier upland vegetation boundary. These types are dominated by mostly wetter species, but also include a minor component of upland species. Types 1, 6, and 8 combined make up most of the wet meadows located within the mitigation site.

At this site only one upland type is present. The Type 2 upland area is dominated by slender wheatgrass (*Agropyron trachycaulum*), redtop (*Agrostis alba*), and common sunflower (*Helianthus annuus*). The Type 2 community was mapped in areas of degraded pasture, as well as on upland slopes created around the pond excavations and spoil piles.

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Several noxious weeds were observed throughout the Peterson Ranch site including spotted knapweed (*Centaurea maculosa*), Canada thistle (*Cirsium arvense*), and hound's-tongue (*Cynoglossum officinale*). Other weedy species associated with disturbance include curly dock (*Rumex crispus*), common dandelion (*Taraxicum officinalis*), lambs quarters (*Chenopodium album*), pepper-grass (*Lepidium perfoliatum*), tumbleweed (*Sisymbrium altissimum*), quackgrass (*Agropyron repens*) and pennycress (*Thlaspi arvensis*).

Vegetation transect results are detailed in the attached data forms and are graphically summarized below. Three "reaches" of upland community Type 2 are shown on Transect 2; these reaches were broken out by topography and slight vegetation differences, and are likely to transition to separate communities over time.

Transect 1:

Start	Type 2 – Agropyron Upland (114')	Type 4 – Eleocharis/Carex Wetland (108')	Total: 222	End
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Transect 2:

Start	Type 2 – Agropyron Upland (30')	Type 2 – Agropyron Upland (75')	Type 2 – Agropyron Upland (90')	Total: 195	End
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Table 1: 2002 Peterson Ranch Vegetation Species List

Scientific Name	Common Name	Region 9 (Northwest) Wetland Indicator
<i>Achillea millefolium</i>	common yarrow	FACU
<i>Agropyron repens</i>	quack grass	FACU
<i>Agropyron smithii</i>	western wheatgrass	FACU
<i>Agropyron trachycaulum</i>	slender wheatgrass	FAC
<i>Agrostis alba</i>	Redtop	FAC+
<i>Alopecurus pratensis</i>	meadow foxtail	FACW
<i>Amaranthus retroflexus</i>	red-root amaranth	FACU+
<i>Beckmannia syzigachne</i>	American sloughgrass	OBL
<i>Betula occidentalis</i>	birch	FACW
<i>Bromus inermis</i>	smooth brome	--
<i>Bromus tectorum</i>	cheatgrass	--
<i>Carduus nutans</i>	musk thistle	--
<i>Carex microptera</i>	small winged sedge	FAC
<i>Carex nebrascensis</i>	Nebraska sedge	OBL
<i>Carex utriculata</i>	beaked sedge	OBL
<i>Centaurea maculosa</i>	spotted knapweed	--
<i>Chenopodium album</i>	white goosefoot	FAC
<i>Cirsium arvense</i>	Canada thistle	FACU+
<i>Cornus stolonifera</i>	red-osier dogwood	FACW
<i>Crataegus douglasii</i>	Douglas hawthorn	FAC
<i>Dactylis glomerata</i>	orchardgrass	FACU
<i>Descurainia sophia</i>	tansy mustard	--
<i>Elaeagnus commutata</i>	silverberry	NI
<i>Eleocharis palustris</i>	creeping spike rush	OBL
<i>Elymus cinereus</i>	big basin wildrye	FACU
<i>Elymus triticoides</i>	creeping wildrye	FAC
<i>Equisetum arvense</i>	field horsetail	FAC
<i>Festuca pratensis</i>	meadow fescue	FACU+
<i>Glyceria striata</i>	fowl mannagrass	OBL
<i>Helianthus annuus</i>	common sunflower	FACU+
<i>Hordeum jubatum</i>	barley fox-tail	FAC+
<i>Iris missouriensis</i>	rocky mountain iris	OBL
<i>Juncus balticus</i>	Baltic rush	OBL
<i>Juncus ensifolius</i>	three-stamen rush	FACW
<i>Kochia scoparia</i>	summer-cypress	FAC

Table 1: (continued)

Scientific Name	Common Name	Region 9 (Northwest) Wetland Indicator
<i>Lepidium perfoliatum</i>	clasping pepper-grass	FACU+
<i>Lomatium spp.</i>	biscuit root	--
<i>Lychnis alba</i>	white campion	--
<i>Malva neglecta</i>	mallow	--
<i>Medicago sativa</i>	alfalfa	--
<i>Mentha arvensis</i>	mint	FAC
<i>Myriophyllum spicatum</i>	eurasian water-milfoil	OBL
<i>Phalaris arundinaceae</i>	canary reed grass	FACW
<i>Phleum pratense</i>	Timothy	FACU
<i>Plantago major</i>	common plantain	FAC+
<i>Poa ampla</i>	big bluegrass	--
<i>Polygonum amphibium</i>	water smartweed	OBL
<i>Polygonum aviculare</i>	prostrate knotweed	FACW+
<i>Populus tremuloides</i>	aspen	FAC+
<i>Populus trichocarpa</i>	black cottonwood	FAC
<i>Potentilla anserina</i>	silverweed	OBL
<i>Potentilla gracilis</i>	northwest cinquefoil	FAC
<i>Prunus virginiana</i>	serviceberry	FACU
<i>Ribes aureum</i>	swamp current	FAC+
<i>Rosa woodsii</i>	woods rose	FACU
<i>Rumex crispus</i>	curly dock	FACW
<i>Salix bebbiana</i>	Bebbs willow	FACW
<i>Salix exigua</i>	sandbar willow	OBL
<i>Salix geyeriana</i>	Geyer willow	FACW+
<i>Scirpus acutus</i>	hard stem bulrush	OBL
<i>Sisymbrium altissimum</i>	tall tumble mustard	FACU-
<i>Solidago missouriensis</i>	Missouri goldenrod	--
<i>Taraxacum officinale</i>	common dandelion	FACU
<i>Thlaspi arvensis</i>	pennycress	NI
<i>Triglochin maritimum</i>	seaside arrowgrass	OBL
<i>Trifolium pratense</i>	red clover	FACU
<i>Typha latifolia</i>	common cattail	OBL
<i>Veronica americana</i>	American speedwell	OBL

3.3 Soils

Soils are mapped in the Granite County Soil Survey as Carten loam, Bushong loam and a hydric-listed Blossberg loam. Wetland soils observed during monitoring and documented on the Routine Wetland Determination form were mostly sandy clay, clay loams, sandy clay loams and minor components of peat with very low chromas (1 or 2) within 6 inches of the surface. Mottles (redoximorphic features) were not present in any of the profiles. Several soil profiles described on the Routine Wetland Determination forms were mapped as upland sampling points, having no soil moisture or distinct hydric characteristics within 18 inches of the surface.

3.4 Wetland Delineation

Delineated wetland boundaries are illustrated on **Figure 3**. Completed wetland delineation forms are included in **Appendix B**. Soils, vegetation, and hydrology are discussed in preceding sections. Monitoring in 2002 identified the following conditions:

	Monitoring Area
Gross Wetland Area	25.98
Open Water Area	1.90
Upland "Islands"	1.63
Net Wetland Area	22.45

Approximately 22.45 wetland acres and 1.90 open water acres are currently within the monitoring area (**Figure 3**), for a total of 24.35 acres of aquatic habitat. The pre-construction wetland delineation reported 90 acres of wetland and no open water acres throughout the entire 135-acre conservation easement. The mitigation site encompasses only 48 acres of this larger total. Turnstone Biological mapped 22.6 acres of wetlands within the current mitigation site boundary. A pre-project delineation map is provided in **Appendix A, Figure 4**. The net increase in aquatic habitat to date is $24.35 - 22.6 = 1.74$ acres.

The total open water acreage included 0.55 acre of the created pond # 2, despite the lack of emergent or aquatic wetlands surrounding the pond. Further wetland acres will develop throughout the basin of pond # 2 as wetland vegetation establishes over time.

Pre-project and post-project delineation boundaries were observed to be fairly consistent. However, some differences were observed between pre-project and post-project wetland boundaries. A few such areas of note occur northeast of Pond #2, where mapped pre-project wetlands were apparently disturbed by construction and did not exhibit wetland characteristics during the 2002 monitoring effort. Given adequate hydrology, these areas may revert back to wetlands over time. The general timing of site visits and different evaluators also had a minor influence on wetland boundaries.

3.5 Wildlife

Wildlife species, or evidence of wildlife, observed on the site during 2002 monitoring efforts is listed in **Table 2**. Species observed include American crow, flicker, great blue heron, killdeer, mallards, western meadowlarks, robins, and yellow-headed blackbirds. Specific evidence observed, as well as activity codes pertaining to birds, is provided on the completed monitoring form in **Appendix B**.

This site provides habitat for a variety of wildlife species. Three mammal and eight bird species were noted at the mitigation site during the 2002 site visits.

Table 2: Wildlife Species Observed at the Peterson Ranch Mitigation Site During 2002 Monitoring

FISH	
None	
AMPHIBIANS	
None	
REPTILES	
None	
BIRDS	
American Crow (<i>Corvus brachyrhynchos</i>)	American Robin (<i>Turdus migratorius</i>)
Great Blue Heron (<i>Ardea herodias</i>)	Yellow-headed blackbird (<i>Xanthocephalus xanthocephalus</i>)
Killdeer (<i>Charadrius vociferous</i>)	Western Meadowlark (<i>Sturnella neglecta</i>)
Mallard (<i>Anas platyrhynchos</i>)	Northern Flicker (<i>Colaptes auratus</i>)
MAMMALS	
Coyote (<i>Canis latrans</i>)	
Deer (<i>Odocoileus</i> sp.)	
Red Fox (<i>Vulpes vulpes</i>)	

3.6 Macroinvertebrates

Complete results from the macroinvertebrate sampling locations (**Figure 2**) are presented in **Appendix B**. Sampling points for the Peterson Ranch were located at ponds #1, 2, 4 and 5. Water quality was still likely showing effects of recent construction at the time of macroinvertebrate sampling.

Peterson 1: The sample yielded few organisms, rendering bioassessment results unreliable. The dearth of organisms suggested that poor water quality and/or limited habitats affected invertebrate assemblages.

Peterson 2: Low taxa richness at this site suggested that habitat complexity may be limited. The calculated scores from the bioassessment indicated sub-optimal conditions. Although the biotic index value (7.32) implied that water quality was relatively good here, the abundance of the midges *Psectrocladius elatus* and *Psectrocladius vernalis*, which together dominated the midge fauna at the site, suggested that the water is moderately acidic.

Peterson 4: The sample yielded few organisms, rendering bioassessment results unreliable. Among the animals present, however, the mayfly *Callibaetis* spp. was common, suggesting that water quality was not devastated, and that macrophytes may have contributed to habitat complexity at the site.

Peterson 5: The sample yielded few organisms, rendering bioassessment results unreliable. The dearth of organisms suggests that poor water quality and/or limited habitats affected invertebrate assemblages.

3.7 Functional Assessment

Completed 2002 functional assessment forms are included in **Appendix B**. The Peterson Ranch functional assessment was separated into three areas. These areas included the created wetland pond #1 and associated emergent wet meadow west of the irrigation ditch (AA 1), scrub-shrub emergent wetlands along the irrigation ditch (AA 2), and the created wetland ponds #3, 4 and 5 with associated emergent vegetation east of the irrigation ditch (AA 3). Pond #2 was not included in the assessment areas at this time, as no wetlands have developed within or adjacent to this pond. A complete breakdown of ratings for each assessment area and pre-project assessments areas are presented in **Table 3**.

The wetlands on the Peterson Ranch mitigation site are currently all rated as a Category III (moderate value), primarily due to moderate ratings for general wildlife, flood attenuation and sediment/nutrient removal variables. Other factors contributing to this score were low ratings for TE species/MNHP species habitat and recreation/education ratings. These areas received a high rating for surface water storage due to the potential acre-feet of water contained within the wetlands during seasonal high flows. The variable for production export/food chain support rated high due to the overall vegetated acres, outlet presence, and perennial water regime.

Table 3: Summary of Baseline and 2002 Wetland Function/Value Ratings and Functional Points ¹ at the Peterson Ranch Mitigation Project

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	Assessment Area and Year			
	Baseline 1998 (1996 Method)	2002 AA 1 (1999 Method)	2002 AA 2 (1999 Method)	2002 AA 3 (1999 Method)
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)
MNHP Species Habitat	Low (0.1)	None (0.0)	Low (0.1)	None (0.0)
General Wildlife Habitat	Low (0.1)	Mod (0.5)	Mod (0.7)	Moderate (0.7)
General Fish/Aquatic Habitat	NA	NA	NA	NA
Flood Attenuation	NA	Mod (0.5)	Low (0.2)	Mod (0.5)
Short and Long Term Surface Water Storage	High (1.0)	High (0.8)	High (0.8)	High (0.8)
Sediment, Nutrient, Toxicant Removal	Mod (0.5)	Mod (0.7)	High (0.9)	Mod (0.7)
Sediment/Shoreline Stabilization	NA	Low (0.3)	High (1.0)	Mod (0.7)
Production Export/Food Chain Support	Mod (0.7)	High (0.8)	High (0.8)	High (0.8)
Groundwater Discharge/ Recharge	UNK	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.2)	Low (0.3)	Low (0.3)	Low (0.3)
Recreation/Education Potential	Low (0.1)	Low (0.3)	Low (0.3)	Low (0.3)
Actual Points/ Possible Points	3.0 / 8	5.5 / 11	6.4 / 11	6.1 / 11
% Of Possible Score Achieved	38%	50%%	58%	55%
Overall Category	III (borderline IV)	III	III	III
Total Acreage of Assessed Wetlands and Open Water within Easement by AA	22.6 ac	7.0 ac	3.0 ac	13.8 ac
Functional Units (acreage x actual points) by AA	67.8 fu	38.5 fu	19.2 fu	84.18 fu
Total Acreage of Assessed Wetlands and Open Water on Site	22.6 ac	24.35 ac total – (0.55 ac Pond #2) = 23.8 ac		
Total Functional Units on Site	67.8 fu	141.88 fu		
Net Acreage Gain (assessed wetlands and open water only)	NA	1.2 ac		
Net Functional Unit Gain	NA	74.08 fu		

¹ See completed MDT baseline functional assessment forms in Appendix D and 2002 forms in Appendix B for further detail.

² The baseline assessment was performed using the 1996 MDT assessment method, several parameters which were substantially revised during development of the 1999 MDT assessment method, which was applied during 2002 monitoring. Thus, direct comparison of pre- and post-project functions is not possible, although some general trends can be noted.

The AA's received a low to moderate flood attenuation rating due to the presence of an inflow channel into the wetland and restricted nature of the outlet. The AA's also received a low recreation/education rating since the site is moderately disturbed and is privately owned. AA's 1 and 3 received a low to moderate ratings for sediment/shoreline stability due to a lack of plants with deep binding roots. AA 2 received a higher rating for sediment/shoreline stability due to the presence of mature shrubs with deep binding root systems.

Based on functional assessment results (**Table 3**), approximately 140.5 functional units occur at the Peterson Ranch mitigation site. Baseline functional assessment results are also provided in **Table 3** for general comparative purposes. However, it should be noted that direct comparison between the baseline and 2002 functional assessments are not possible, as they were completed using different versions of the MDT functional assessment method. However, assessments can still compare qualitatively. The baseline assessment was completed using the 1996 version, while the 2002 assessment was conducted using the most current (1999) version.

3.8 Photographs

Representative photographs taken from photo-points and transect ends are presented in **Appendix C**.

3.9 Revegetation Efforts

Upon completion of the project construction, revegetation efforts were conducted to enhance riparian and wetland habitat surrounding the created ponds. Riparian cuttings collected from surrounding Flint Creek areas were sprigged along the margins of created ponds. Further enhancement included plantings of containerized stock of several native shrubs found within the area. These species included woods rose (*Rosa woodsii*), golden current (*Ribes aureum*), chokecherry (*Prunus virginiana*), silverberry (*Elaeagnus commutata*), and red-osier dogwood (*Cornus stolonifera*). The adjacent wetland slopes of the created wetland ponds were seeded with a wet mix consisting of slender wheatgrass (*Agropyron trachycaulum*), western wheatgrass (*Agropyron smithii*), creeping wildrye (*Elymus triticoides*), American sloughgrass (*Beckmannia syzigachne*), western mannagrass (*Glyceria occidentalis*), Baltic rush (*Juncus balticus*), and bluejoint reedgrass (*Calamagrostis canadensis*). Drier upland slopes disturbed during construction efforts were seeded with a dry mix consisting of slender wheatgrass (*Agropyron trachycaulum*), western wheatgrass (*Agropyron smithii*), big basin wildrye (*Elymus cinereus*), green needlegrass (*Stipa viridula*), and big bluegrass (*Poa ampla*). Planting specifications are presented in **Appendix F**.

Woody species survival data were collected for the Peterson Ranch. In general, species survival was good except for one species, silverberry, which exhibited a very low survival rate of 28%. The following species had higher survival rates: woods rose (96%), golden current (99%), chokecherry (94%), and red-osier dogwood (100%). The number of willow sprigs were approximated, but not accurately counted due to high numbers of cuttings. In general most of the observed sprigs were alive and exhibited some growth. Survival data are presented in **Appendix B**.

3.10 Maintenance Needs/Recommendations

Weed control and revegetation of disturbed sites is needed to prevent further weed spread, reduce the risk of new weeds invading, reduce wind and water erosion, and reduce sediment input to surface waters. Several noxious weeds are present including Canada thistle, hound's-tongue and spotted knapweed that must be controlled under the Montana County Noxious Weed Control Act [7-22-2151].

3.11 Current Credit Summary

At this time approximately 22.45 acres of wetland and 1.90 acres of open water occur on the mitigation site, for a total of 24.35 acres of aquatic habitat. Subtracting the original 22.6 acres of pre-project wetlands from this total yields a current net of approximately 1.75 wetland/open water acres. It is likely that additional acreage will form with additional time and more normal precipitation. The site has gained approximately 74 functional units to date.

4.0 REFERENCES

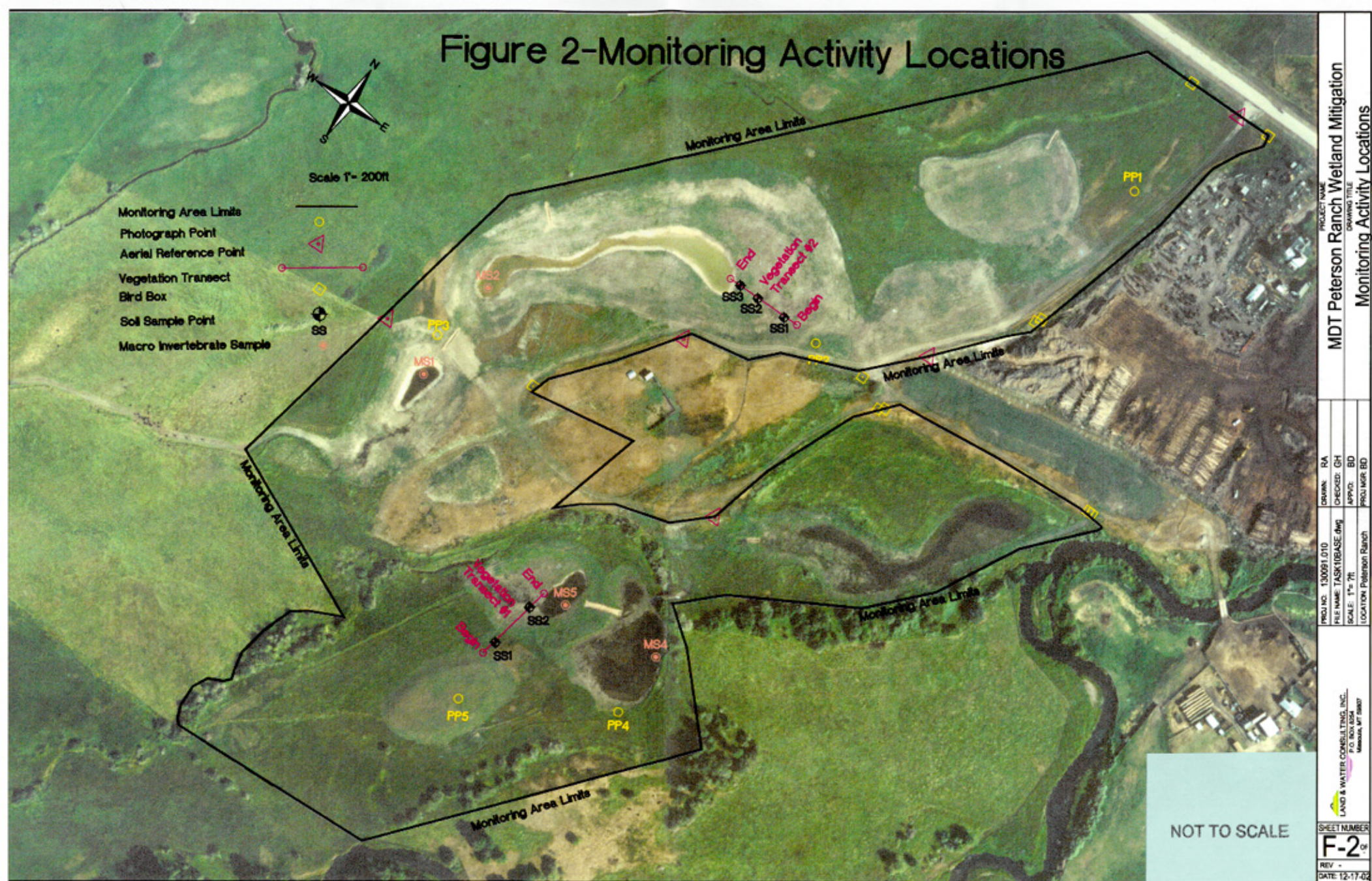
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Appendix A

FIGURES 2, 3, AND 4

*MDT Wetland Mitigation Monitoring
Peterson Ranch
Hall, Montana*

Figure 2-Monitoring Activity Locations



PROJECT NAME		MDT Peterson Ranch Wetland Mitigation	
DRAWING TITLE		Monitoring Activity Locations	
PROJ. NO.	130091.010	DRAWN	RA
FILE NAME	TASK DATABASE.dwg	CHECKED	GH
SCALE	1" = 7ft	APPROV.	BD
LOCATION	Peterson Ranch	PROJ. MGR.	BD

Figure 3-Mapped Site Features 2002

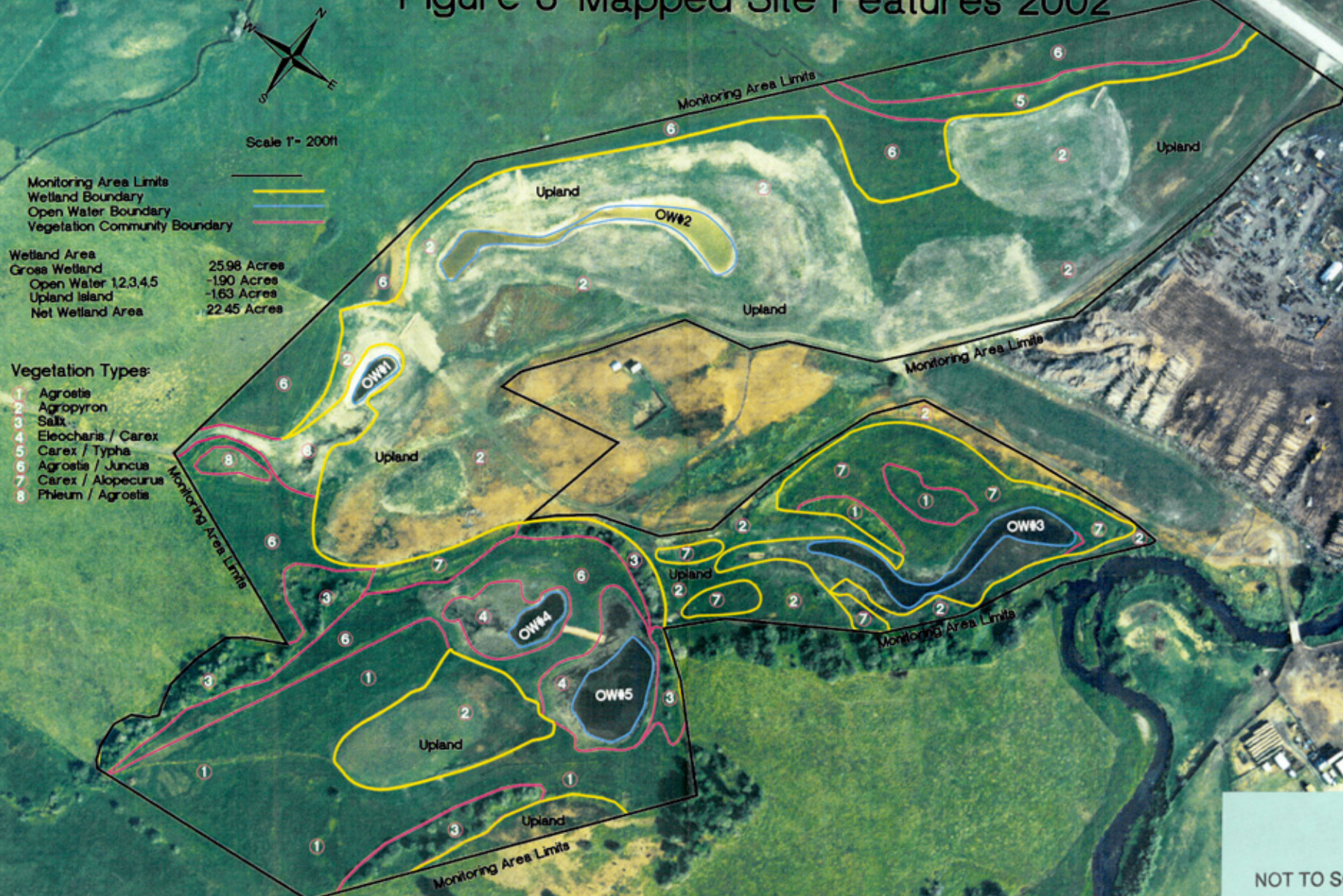


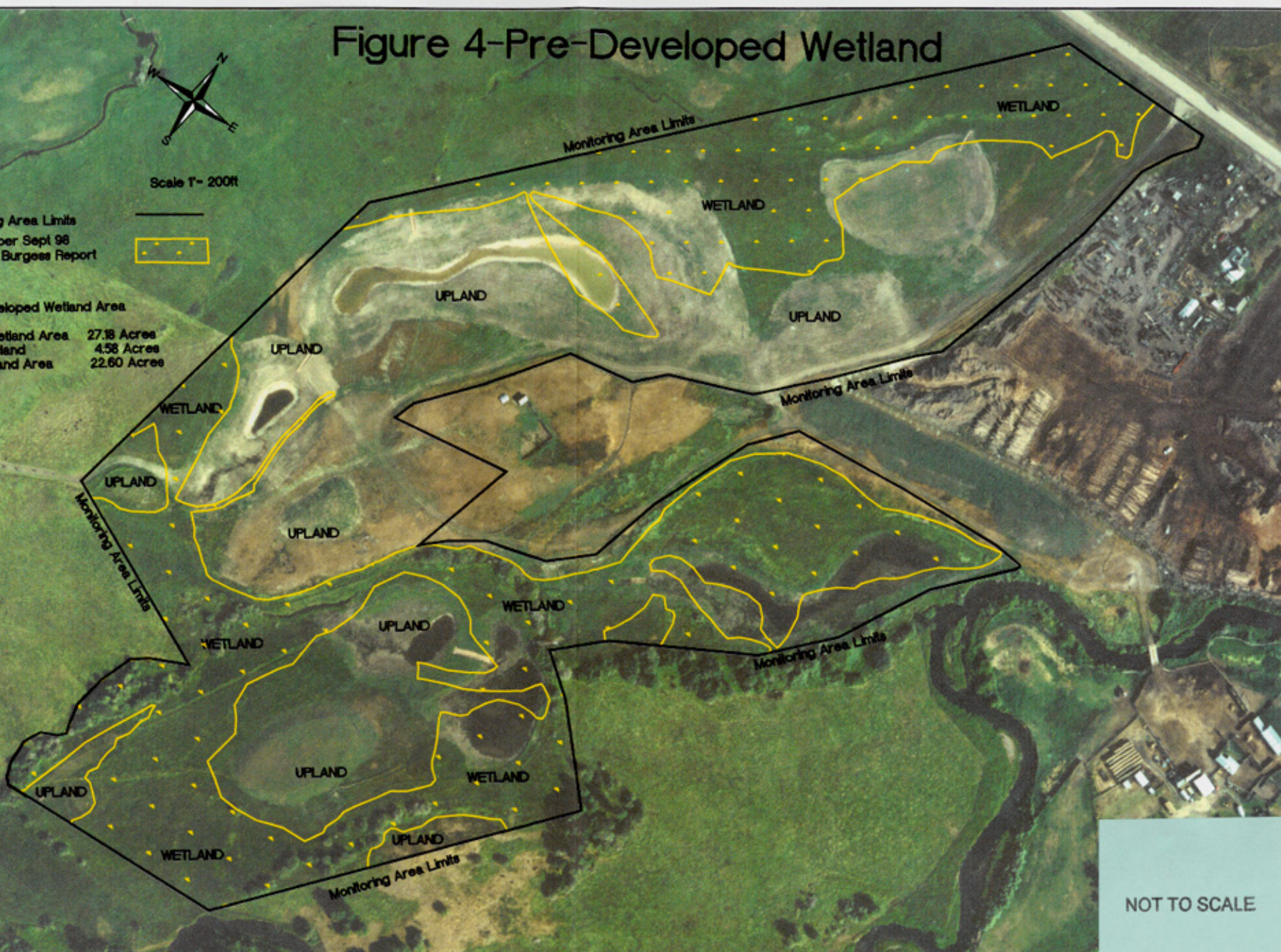
Figure 4-Pre-Developed Wetland

Monitoring Area Limits
Wetland per Sept 98
Carter - Burgess Report

Scale 1" = 200ft

Pre-Developed Wetland Area

Gross Wetland Area 27.18 Acres
Upland Island 4.58 Acres
Net Wetland Area 22.60 Acres



NOT TO SCALE

Appendix B

COMPLETED 2002 WETLAND MITIGATION SITE MONITORING FORM

COMPLETED 2002 BIRD SURVEY FORM

COMPLETED 2002 WETLAND DELINEATION FORMS

COMPLETED 2002 FUNCTIONAL ASSESSMENT FORM

MACROINVERTEBRATE SAMPLE ANALYSES

MDT Wetland Mitigation Monitoring

Peterson Ranch

Hall, Montana

LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Peterson Ranch Project Number: 130091.010 Assessment Date: 7/31/02
Location: E. of Hall MDT District: Upper Clark Fork Milepost:
Legal description: T 10 N R 13 W Section 35 Time of Day: Morning to Afternoon
Weather Conditions: Clear & sunny Person(s) conducting the assessment: Greg Howard
Initial Evaluation Date: 7/31/02 Visit #: 1 Monitoring Year: 1
Size of evaluation area: 93 acres Land use surrounding wetland: Agriculture & forestry products

HYDROLOGY

Surface Water Source: _____

Inundation: Present x Absent Average depths: 3 ft Range of depths: 0-6 ft

Assessment area under inundation: 20-25 %

Depth at emergent vegetation-open water boundary: 0.5 ft

If assessment area is not inundated are the soils saturated w/in 12" of surface: Yes x No

Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): _____

Groundwater

Monitoring wells: Present _____ Absent x

Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

Additional Activities Checklist:

x Map emergent vegetation-open water boundary on air photo

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

____GPS survey groundwater monitoring wells locations if present

COMMENTS/PROBLEMS: New mitigation site, constructed wetland ponds, emergent and shrub –scrub types. Pond water levels low during early summer visit.

VEGETATION COMMUNITIES

Community No.: 1 Community Title (main species): Agrostis

Dominant Species	% Cover	Dominant Species	% Cover
<i>Agrostis alba</i>	6	<i>Typha latifolia</i>	T
<i>Carex nebrascensis</i>	P	<i>Scirpus acutus</i>	T
<i>Agropyron trachycaulum</i>	P	<i>Hordeum jubatum</i>	P
<i>Potentilla anserina</i>	P		
<i>Trifolium pratense</i>	P		

COMMENTS/PROBLEMS: Emergent wetland, dominated by grasses and some sedges.

Community No.: 2 Community Title (main species): Agropyron/Helianthus

Dominant Species	% Cover	Dominant Species	% Cover
<i>Agropyron trachycaulum</i>	7	<i>Malva neglecta</i>	P
<i>Agrostis alba</i>	T	<i>Thlaspi arvensis</i>	T
<i>Potentilla anserina</i>	P	<i>Chenopodium album</i>	T
<i>Helianthus annuus</i>	P	<i>Alopecurus pratensis</i>	T
<i>Cirsium arvense</i>	T	<i>Taraxacum officinale</i>	P

COMMENTS/PROBLEMS: Dry slopes surrounding created ponds. Area dominated by upland grasses and weedy forb species.

Community No.: 3 Community Title (main species): Salix

Dominant Species	% Cover	Dominant Species	% Cover
<i>Salix bebbiana</i>	5	<i>Geum macrophyllum</i>	T
<i>Crataegus douglasii</i>	5	<i>Cornus stolonifera</i>	P
<i>Ribes americanum</i>	P	<i>Salix geyeriana</i>	1
<i>Salix exigua</i>	1	<i>Agrostis alba</i>	1
<i>Carex utriculata</i>	2	<i>Populus trichocarpa</i>	1

COMMENTS/PROBLEMS: Scrub-shrub wetland type, located along side channel or irrigation ditch.

Additional Activities Checklist:

X Record and map vegetative communities on air photo

VEGETATION COMMUNITIES (continued)

Community No.: 4 Community Title (main species): Eleocharis/Carex

Dominant Species	% Cover	Dominant Species	% Cover
<i>Eleocharis palustris</i>	1	<i>Agrostis alba</i>	T
<i>Carex nebrascensis</i>	P	<i>Juncus ensifolius</i>	T
<i>Typha latifolia</i>	P	<i>Potentilla anserina</i>	T
<i>Alopecurus pratensis</i>	P		
<i>Polygonum amphibium</i>	T		

COMMENTS/PROBLEMS: Emergent wetland surrounding created pond # 4 & 5.

Community No.: 5 Community Title (main species): Carex/Typha

Dominant Species	% Cover	Dominant Species	% Cover
<i>Carex nebrascensis</i>	4		
<i>Typha latifolia</i>	2		
<i>Alopecurus pratensis</i>	3		

COMMENTS/PROBLEMS: Depressional wetlands found within areas of lower topography, running across northwest corner of mitigation site. Hydrology source is groundwater & irrigation ditches.

Community No.: 6 Community Title (main species): Agrostis/Juncus

Dominant Species	% Cover	Dominant Species	% Cover
<i>Agrostis alba</i>	4		
<i>Juncus balticus</i>	3		
<i>Phleum pratense</i>	1		
<i>Trifolium pratense</i>	P		
<i>Agropyron repens</i>	P		

COMMENTS/PROBLEMS: Wetland meadow complex, located between drier upland slopes and depressional wetlands list in community no. 5. Vegetation fringe between upland and wetland, community type considered wetland.

VEGETATION COMMUNITIES (continued)

Community No.: 7 Community Title (main species): Carex/Alopecurus

Dominant Species	% Cover	Dominant Species	% Cover
<i>Carex utriculata</i>	5		
<i>Alopecurus pratensis</i>	2		
<i>Veronica americana</i>	P		
<i>Juncus balticus</i>	P		
<i>Poa</i> spp.	T		

COMMENTS/PROBLEMS: Vegetation along irrigation ditch, no shrub coverage. Ditch and surrounding bottoms inundated, low flow present.

Community No.: 8 Community Title (main species): Phleum/Agrostis

Dominant Species	% Cover	Dominant Species	% Cover
<i>Phleum pratense</i>	2	<i>Carex nebrascensis</i>	P
<i>Agrostis alba</i>	2	<i>Willow sprigs</i>	P
<i>Veronica americana</i>	P		
<i>Alopecurus pratensis</i>	P		
<i>Juncus balticus</i>	T		

COMMENTS/PROBLEMS: Upper basin of created wetland pond # 1. Surface water present, flowing down gradient into pond. Hydrology source comes from irrigation ditch. Low vegetation cover, few drier species mixed with mostly wetland species. Area sprigged with willow cuttings, heavy planting along areas of standing water.

Community No.: Community Title (main species):

Dominant Species	% Cover	Dominant Species	% Cover

COMMENTS/PROBLEMS: _____

COMPREHENSIVE VEGETATION LIST

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
<i>Achillea millefolium</i>	2	<i>Lomatium spp.</i>	2
<i>Agropyron repens</i>	2,6	<i>Lychnis alba</i>	2
<i>Agropyron smithii</i>	2	<i>Malva neglecta</i>	2
<i>Agropyron trachycaulum</i>	2,6	<i>Medicago sativa</i>	2
<i>Agrostis alba</i>	1,2,3,4,6,8	<i>Mentha arvensis</i>	4,7
<i>Alopecurus pratensis</i>	2,4,5,7,8	<i>Myriophyllum spicatum</i>	OW
<i>Amaranthus retroflexus</i>	2	<i>Phalaris arundinaceae</i>	6,7,8
<i>Beckmannia syzigachne</i>	5,7	<i>Phleum pratense</i>	6,8
<i>Betula occidentalis</i>	3	<i>Plantago major</i>	2
<i>Bromus inermis</i>	2	<i>Poa spp</i>	2
<i>Bromus tectorum</i>	2	<i>Polygonum amphibium</i>	4
<i>Carduus nutans</i>	2	<i>Polygonum aviculare</i>	4
<i>Carex microptera</i>	6	<i>Populus trichocarpa</i>	3
<i>Carex nebrascensis</i>	1,4,5,8	<i>Potentilla anserina</i>	4
<i>Carex utriculata</i>	1,3,7	<i>Potentilla gracilis</i>	2
<i>Centaurea maculosa</i>	2	<i>Rosa woodsii</i>	2,3
<i>Chenopodium album</i>	2	<i>Rumex crispus</i>	2
<i>Cirsium arvense</i>	2	<i>Salix bebbiana</i>	3
<i>Cornus stolonifera</i>	3	<i>Salix exigua</i>	3
<i>Crataegus douglasii</i>	3	<i>Salix geyeriana</i>	3
<i>Dactylis glomerata</i>	2	<i>Scirpus acutus</i>	1
<i>Descurainia sophia</i>	2	<i>Sisymbrium altissimum</i>	2
<i>Elaeagnus commutata</i>	2	<i>Solidago missouriensis</i>	2
<i>Eleocharis palustris</i>	4	<i>Taraxacum officinale</i>	2,6
<i>Elymus cinereus</i>	2	<i>Thlaspi arvensis</i>	2
<i>Equisetum arvense</i>	2,4	<i>Triglochin maritimum</i>	1,6,7
<i>Festuca pratensis</i>	2	<i>Trifolium pratense</i>	2
<i>Glyceria striata</i>	7	<i>Typha latifolia</i>	1,4,5
<i>Helianthus annuus</i>	2	<i>Veronica americana</i>	7,8
<i>Hordeum jubatum</i>	2		
<i>Iris missouriensis</i>	4,7		
<i>Juncus balticus</i>	6,7		
<i>Juncus ensifolius</i>	4		
<i>Kochia scoparia</i>	2		
<i>Lepidium perfoliatum</i>	2		

COMMENTS/PROBLEMS: _____

PLANTED WOODY VEGETATION SURVIVAL

Pond #	Species	Number Originally Planted	Number Observed	Mortality Causes
1	<i>Rosa woodsii</i>	14	14	
1	<i>Ribes spp.</i>	14	13	
1	<i>Prunus virginiana</i>	30	28	
1	<i>Elaeagnus commutata</i>	10	1	
1	<i>Cornus stolonifera</i>	14	14	
1	<i>Salix spp.</i>	350	297	
2	<i>Ribes aureum</i>	28	28	
2	<i>Prunus virginiana</i>	30	29	
2	<i>Cornus stolonifera</i>	28	28	
2	<i>Rosa woodsii</i>	14	12	
2	<i>Elaeagnus commutata</i>	20	6	
2	<i>Salix spp.</i>	700	693	
3	<i>Rosa woodsii</i>	14	14	
3	<i>Prunus virginiana</i>	20	20	
3	<i>Elaeagnus commutata</i>	10	4	
3	<i>Salix spp.</i>	400	300	
4	<i>Ribes aureum</i>	15	15	
4	<i>Prunus virginiana</i>	20	17	
4	<i>Cornus stolonifera</i>	15	15	
4	<i>Rosa woodsii</i>	14	14	
4	<i>Elaeagnus commutata</i>	10	3	
4	<i>Salix spp.</i>	800	760	
5	<i>Ribes aureum</i>	15	15	
5	<i>Salix spp.</i>	2500	2000	

COMMENTS/PROBLEMS: _____

[illegible]

BIRDS

Were man made nesting structures installed? Yes x No Type: Boxes How many? xx Are the nesting structures being utilized? Yes x No Do the nesting structures need repairs? Yes No x

[illegible]

_____Macroinvertebrate sampling (if required)

[illegible]

PHOTOGRAPHS

Using a camera with a 50 mm lenses and color film take photographs of the following permanent reference points listed in the checklist below. Record the direction of the photograph using a compass. (The first time at each site establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3' above ground, survey the location with a resource grade GPS and mark the location on the air photo.)

Checklist:

- ☒ One photo for each of the 4 cardinal directions surrounding wetland
- ☒ At least one photo showing upland use surrounding wetland – if more than one upland use exists, take additional photos
- ☒ At least one photo showing buffer surrounding wetland
- ☒ One photo from each end of vegetation transect showing transect

Location	Photo Frame #	Photograph Description	Compass Reading
1	1-3	Panoramic looking from south to north across the western half of the site.	180° – 0°
1	5	Looking northeast towards parcel boundary, lumber mill in background	90°
2	6	Looking southwest along vegetation transect no. 2.	225°
3	7 – 8	Looking north at the southern end of created wetland pond no.2.	0°
3	9 - 10	Looking west at emergent wetlands along fence line and beyond.	270°
3	11 - 12	Looking southeast at created wetland pond no. 1.	135°
4	13	Looking south across created wetland pond no 4.	180°
5	14	Looking north along vegetation transect no. 2 and created wetland no. 5.	0°
5	15	Looking north along vegetation transect no. 2 and created wetland no. 5.	0°
5	16	Looking northeast at created wetland no. 4	45°
5	17	Looking south at the top of upland spoil pile, view opposite of transect..	0°

COMMENTS/PROBLEMS: _____

GPS SURVEYING

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

Checklist:

- ☒ Jurisdictional wetland boundary
- ☒ 4-6 landmarks recognizable on the air photo
- ☒ Start and end points of vegetation transect(s)
- ☒ Photo reference points
- ☐ Groundwater monitoring well locations

COMMENTS/PROBLEMS: _____

WETLAND DELINEATION

(Attach Corps of Engineers delineation forms)

At each site conduct the items on the checklist below:

- ☒ Delineate wetlands according to the 1987 Army Corps manual.
- ☒ Delineate wetland-upland boundary on the air photo
- ☐ Survey wetland-upland boundary with a resource grade GPS survey

COMMENTS/PROBLEMS: _____

FUNCTIONAL ASSESSMENT

(Complete and attach full MDT Montana Wetland Assessment Method field forms; also attach abbreviated field forms, if used)

COMMENTS/PROBLEMS: Three distinct areas were each evaluated separately, these assessment areas are ponds no. 1 & 2, scrub-shrub emergent and ponds no. 4 & 5.

MAINTENANCE

Were man-made nesting structures installed at this site? YES ☒ NO ☐

If yes, do they need to be repaired? YES ☐ NO ☒

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

Were man-made structures build or installed to impound water or control water flow into or out of the wetland?
YES ☐ NO ☒

If yes, are the structures working properly and in good working order? YES ☐ NO ☐

If no, describe the problems below.

COMMENTS/PROBLEMS: _____

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Pond no. 2 Date: 7/30/02 Examiner: Greg Howard Transect # 2

Approx. transect length: 190ft. Compass Direction from Start (Upland): 270

Vegetation type 1:	Upland	
Length of transect in this type:	30	feet
Species:	Cover:	
Agropyron repens	3	
Thlaspi arvensis	T	
Potentilla anserina	P	
Malva neglecta	P	
Helianthus annuus	T	
Descurainia sophia	T	
Plantago major	T	
Total Vegetative Cover:		45%

Vegetation type 2:	Upland	
Length of transect in this type:	75	feet
Species:	Cover:	
Agropyron trachycaulum	6	
Agrostis alba	T	
Potentilla anserina	P	
Festuca pratensis	T	
Malva neglecta	T	
Taraxacum officinale	P	
Helianthus annuus	P	
Cirsium arvense	T	
Phleum pratense	T	
Total Vegetative Cover:		70%

Vegetation type 3:	Created wetland slopes adjacent to waters edge.	
Length of transect in this type:	90	feet
Species:		Cover:
Agropyron trachycaulum		1
Malva neglecta		T
Potentilla anserina		T
Taraxacum officinale		T
Eleocharis palustris		T
Carex nebrascensis		P
Total Vegetative Cover:		17%

Vegetation type 4:		
Length of transect in this type:		feet
Species:		Cover:
Total Vegetative Cover:		



MDT WETLAND MONITORING – VEGETATION TRANSECT (continued)

Site: Ponds no. 4 Date: 7/30/02 Examiner: Greg Howard Transect # 1

Approx. transect length: 222 Compass Direction from Start (Upland): North (0°)

Vegetation type 1: Upland		
Length of transect in this type:	114	feet
Species:	Cover:	
Agropyron trachycaulum	3	
Thlaspi arvensis	P	
Alopecurus pratensis	T	
Trifolium pratense	4	
Agrostis alba	P	
Agropyron repens	1	
Taraxacum officinale	P	
Bromus inermis	P	
Total Vegetative Cover:	90%	

Vegetation type 2: Wetland along outer fringes of pond no. 4.		
Length of transect in this type:	108	feet
Species:	Cover:	
Carex nebrascensis	P	
Eleocharis palustris	1	
Typha latifolia	P	
Potentilla anserine	T	
Alopecurus pratensis	P	
Polygonum amphibium	T	
Agrostis alba	T	
Myriophyllum spicatum	T	
Total Vegetative Cover:	25%	

Vegetation type 3:		
Length of transect in this type:		feet
Species:	Cover:	
Total Vegetative Cover:		

Vegetation type 4:		
Length of transect in this type:		feet
Species:	Cover:	
Total Vegetative Cover:		

MDT WETLAND MONITORING – VEGETATION TRANSECT (back of form)

Cover Estimate

+= <1%	3 = 11-20%
1 = 1-5%	4 = 21-50%
2 = 6-10%	5 = >50%

Indicator Class:

+ = Obligate
- = Facultative/Wet
0 = Facultative

Source:

P = Planted
V = Volunteer

Percent of perimeter % developing wetland vegetation – excluding dam/berm structures.

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

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

Notes:

[illegible]

BIRD SURVEY – FIELD DATA SHEET

Page: 1 of 1

Date: 6-14-02

Survey Time: 6:30 am – 1:00 pm

SITE:

[illegible]

Notes: Bird boxes looked used, but no species identification was made during site visit.

Behavior: BP – one of a breeding pair; BD – breeding display; F – foraging; FO – flyover; L – loafing; N – nesting

Habitat: AB – aquatic bed; FO – forested; I – island; MA – marsh; MF – mud flat; OW – open water; SS – scrub/shrub; UP – upland buffer; WM – wet meadow, US – unconsolidated shoreline

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Peterson Ranch</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Greg Howard</u>	Date: <u>7/30/02</u> County: <u>Granite</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u> x </u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u> </u> No Is the area a potential Problem Area?: <u> </u> Yes <u> </u> No (If needed, explain on reverse.)	Community ID: <u> </u> Transect ID: <u> 1 – Pool 4 </u> Plot ID: <u> 1 </u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<i>Agropyron trachycaulum</i>	H	FAC	9			
2	<i>Trifolium pratense</i>	H	FACU	10			
3	<i>Agropyron repens</i>	H	FACU	11			
4	<i>Thlaspi arvensis</i>	H	--	12			
5	<i>Taraxacum officinale</i>	H	FACU	13			
6	<i>Bromus inermis</i>	H	--	14			
7	<i>Agrostis alba</i>	H	FAC+	15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/7 = 28%

Area dominated by upland vegetation.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><u> </u> Stream, Lake, or Tide Gauge</p> <p><u> </u> Aerial Photographs</p> <p><u> </u> Other</p> <p><u> x </u> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: <u> - </u> (in.)</p> <p>Depth to Free Water in Pit: <u> - </u> (in.)</p> <p>Depth to Saturated Soil: <u> - </u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><u> </u> Inundated</p> <p><u> </u> Saturated in Upper 12 Inches</p> <p><u> </u> Water Marks</p> <p><u> </u> Drift Lines</p> <p><u> </u> Sediment Deposits</p> <p><u> </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><u> </u> Oxidized Root Channels in Upper 12 Inches</p> <p><u> </u> Water-Stained Leaves</p> <p><u> </u> Local Soil Survey Data</p> <p><u> </u> FAC-Neutral Test</p> <p><u> </u> Other (Explain in Remarks)</p>
Remarks: No apparent hydrology present on site.	

SOILS

Map Unit Name (Series and Phase): _____ Taxonomy (Subgroup): <u>NA</u>				Drainage Class: _____ Field Observations Confirm Mapped Type? _____ Yes <u>X</u> No	
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 - 8+	A	10 YR 2/1	--	--	Sandy clay, fine to medium gravels, large cobbles

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
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Spoil piles from construction of ponds. Low chroma color is present, but is not enough of a hydric indicator to be considered wetland soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? _____ Yes <u>X</u> No Wetland Hydrology Present? _____ Yes <u>X</u> No Hydric Soils Present? _____ Yes <u>X</u> No	Is this Sampling Point Within a Wetland? _____ Yes <u>X</u> No
Remarks: Sampling point is located on the slope of construction spoil pile. Area planted with upland shrubs and seeded with upland grass mix.	

Approved by HQUSACE 2/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Peterson Ranch</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Greg Howard</u>	Date: <u>7/30/02</u> County: <u>Granite</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u> x </u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u> </u> No Is the area a potential Problem Area?: <u> </u> Yes <u> </u> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: <u>1 – Pool 4</u> Plot ID: <u>2</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1 <u>Eleocharis palustris</u>	<u>H</u>	<u>OBL</u>		9 _____		
2 <u>Carex nebrascensis</u>	<u>H</u>	<u>OBL</u>		10 _____		
3 <u>Typha latifolia</u>	<u>H</u>	<u>OBL</u>		11 _____		
4 <u>Potentilla anserina</u>	<u>H</u>	<u>OBL</u>		12 _____		
5 <u>Alopecurus pratensis</u>	<u>H</u>	<u>FACW</u>		13 _____		
6 <u>Polygonum amphibium</u>	<u>H</u>	<u>OBL</u>		14 _____		
7 <u>Agrostis alba</u>	<u>H</u>	<u>FAC+</u>		15 _____		
8 _____				16 _____		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 7/7 = 100%

Area dominated by hydrophytic vegetation.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><u> </u> Stream, Lake, or Tide Gauge</p> <p><u> </u> Aerial Photographs</p> <p><u> </u> Other</p> <p><u> x </u> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: <u> - </u> (in.)</p> <p>Depth to Free Water in Pit: <u> 10 </u> (in.)</p> <p>Depth to Saturated Soil: <u> - </u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><u> </u> Inundated</p> <p><u> x </u> Saturated in Upper 12 Inches</p> <p><u> </u> Water Marks</p> <p><u> </u> Drift Lines</p> <p><u> </u> Sediment Deposits</p> <p><u> </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><u> </u> Oxidized Root Channels in Upper 12 Inches</p> <p><u> </u> Water-Stained Leaves</p> <p><u> </u> Local Soil Survey Data</p> <p><u> </u> FAC-Neutral Test</p> <p><u> </u> Other (Explain in Remarks)</p>
<p>Remarks:</p> <p>Hydrologic indicators present, free water in pit, soils saturated throughout.</p>	

SOILS

Map Unit Name (Series and Phase): _____			Drainage Class: _____		
Taxonomy (Subgroup): <u>NA</u>			Field Observations		
			Confirm Mapped Type? <u> </u> Yes <u> x </u> No		
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 6	A1	10 YR 2/1	-	-	Clay loam
6 – 12+	A2	10 YR 2/1	-	-	Loam w/peat
Hydric Soil Indicators:					
<u> </u> Histosol		<u> </u> Concretions			
<u> </u> Histic Epipedon		<u> </u> High Organic Content in surface Layer in Sandy Soils			
<u> </u> Sulfidic Odor		<u> </u> Organic Streaking in Sandy Soils			
<u> X </u> Aquic Moisture Regime		<u> </u> Listed on Local Hydric Soils List			
<u> </u> Reducing Conditions		<u> </u> Listed on National Hydric Soils List			
<u> X </u> Gleyed or Low-Chroma Colors		<u> </u> Other (Explain in Remarks)			
Sampling point located along vegetation transect, fringe of wetland pond no. 5.					

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u> X </u> Yes <u> </u> No Wetland Hydrology Present? <u> X </u> Yes <u> </u> No Hydric Soils Present? <u> x </u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? <u> x </u> Yes <u> </u> No
Remarks: Sampling point considered a wetland, all three characteristics present.	

Approved by HQUSACE 2/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Peterson Ranch</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Greg Howard</u>	Date: <u>7/30/02</u> County: <u>Granite</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u> x </u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u> </u> No Is the area a potential Problem Area?: <u> </u> Yes <u> </u> No (If needed, explain on reverse.)	Community ID: <u> </u> Transect ID: <u> 2 – Pool 2 </u> Plot ID: <u> 1 </u>

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1 <i>Agropyron trachycaulum</i>	H	FAC		9		
2 <i>Thlaspi arvensis</i>	H	--		10		
3 <i>Potentilla anserina</i>	H	OBL		11		
4 <i>Malva neglecta</i>	H	--		12		
5 <i>Helianthus annuus</i>	H	FACU+		13		
6 <i>Descurainia sophia</i>	H	--		14		
7 <i>Plantago major</i>	H	FAC+		15		
8				16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 3/7 = 42%

Area dominated by mostly upland grasses and weedy species.

HYDROLOGY

Recorded Data (Describe in Remarks): <u> </u> Stream, Lake, or Tide Gauge <u> </u> Aerial Photographs <u> </u> Other <u> x </u> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <u> </u> Inundated <u> </u> Saturated in Upper 12 Inches <u> </u> Water Marks <u> </u> Drift Lines <u> </u> Sediment Deposits <u> </u> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <u> </u> Oxidized Root Channels in Upper 12 Inches <u> </u> Water-Stained Leaves <u> </u> Local Soil Survey Data <u> </u> FAC-Neutral Test <u> </u> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u> -- </u> (in.) Depth to Free Water in Pit: <u> -- </u> (in.) Depth to Saturated Soil: <u> -- </u> (in.)	
Remarks: No evidence of hydrology present.	

SOILS

Map Unit Name (Series and Phase): _____ Taxonomy (Subgroup): <u>NA</u>				Drainage Class: _____ Field Observations Confirm Mapped Type? _____ Yes <u>x</u> No	
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 2.5	O	10 YR 3/2	-	-	Roots & organic w/loam
2.5 – 10+	A	10 YR 3/1	-	-	Clay

Large cobbles 4-6 inches in wide.

Hydric Soil Indicators: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors </div> <div style="width: 45%;"> <input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks) </div> </div>	
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Low chroma-colors present, no other evidence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? _____ Yes <u>x</u> No Wetland Hydrology Present? _____ Yes <u>x</u> No Hydric Soils Present? _____ Yes <u>x</u> No	Is this Sampling Point Within a Wetland? _____ Yes <u>x</u> No
Remarks: Sampling point considered upland.	

Approved by HQUSACE 2/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Peterson Ranch</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Greg Howard</u>	Date: <u>7/30/02</u> County: <u>Granite</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u> x </u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u> </u> No Is the area a potential Problem Area?: <u> </u> Yes <u> </u> No (If needed, explain on reverse.)	Community ID: <u> </u> Transect ID: <u> 2 – Pool 2 </u> Plot ID: <u> 2 </u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<i>Agropyron trachycaulum</i>	H	FAC	9	<i>Phleum pratense</i>	H	FACU
2	<i>Agrostis alba</i>	H	FAC+	10			
3	<i>Potentilla anserina</i>	H	OBL	11			
4	<i>Festuca pratensis</i>	H	FACU+	12			
5	<i>Malva neglecta</i>	H	--	13			
6	<i>Taraxacum officinale</i>	H	FACU	14			
7	<i>Helianthus annuus</i>	H	FACU+	15			
8	<i>Cirsium arvense</i>	H	FACU+	16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 2/9 = 22%

Area mostly dominated by upland grasses and weedy species.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><u> </u> Stream, Lake, or Tide Gauge</p> <p><u> </u> Aerial Photographs</p> <p><u> </u> Other</p> <p><u> x </u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u> -- </u> (in.)</p> <p>Depth to Free Water in Pit: <u> -- </u> (in.)</p> <p>Depth to Saturated Soil: <u> -- </u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><u> </u> Inundated</p> <p><u> </u> Saturated in Upper 12 Inches</p> <p><u> </u> Water Marks</p> <p><u> </u> Drift Lines</p> <p><u> </u> Sediment Deposits</p> <p><u> </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><u> </u> Oxidized Root Channels in Upper 12 Inches</p> <p><u> </u> Water-Stained Leaves</p> <p><u> </u> Local Soil Survey Data</p> <p><u> </u> FAC-Neutral Test</p> <p><u> </u> Other (Explain in Remarks)</p>
<p>Remarks:</p> <p>Soil pit was moist, but not saturated.</p>	

SOILS

Map Unit Name (Series and Phase):			Drainage Class:		
Taxonomy (Subgroup):			Field Observations		
NA			Confirm Mapped Type? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 - 12+	A	10 YR 3/2	-	-	Sandy clay loam
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors			<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)		
Low chroma-colors present, no other hydric indicators evident. Sampling point is considered upland.					

WETLAND DETERMINATION

Hydrophytic Vegetation Present? _____	Yes	<u>x</u>	No	Is this Sampling Point Within a Wetland? _____ Yes <u>x</u> No
Wetland Hydrology Present? _____	Yes	<u>x</u>	No	
Hydric Soils Present? _____	Yes	<u>x</u>	No	
Remarks: Sampling point lacking all three wetland characteristics.				

Approved by HQUSACE 2/92



DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Peterson Ranch</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Greg Howard</u>	Date: <u>7/30/02</u> County: <u>Granite</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u> x </u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u> </u> No Is the area a potential Problem Area?: <u> </u> Yes <u> </u> No (If needed, explain on reverse.)	Community ID: <u> </u> Transect ID: <u> 2 – Pool 2 </u> Plot ID: <u> 3 </u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<i>Agropyron trachycaulum</i>	H	FAC	9			
2	<i>Potentilla anserina</i>	H	OBL	10			
3	<i>Malva neglecta</i>	H	--	11			
4	<i>Taraxacum officinale</i>	H	FACU	12			
5	<i>Eleocharis palustris</i>	H	OBL	13			
6	<i>Carex nebrascensis</i>	H	OBL	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/6 = 66%

Hydrophytic vegetation present, several obligate wetland species. Area mostly dominated by upland grasses and weedy species present.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><u> </u> Stream, Lake, or Tide Gauge</p> <p><u> </u> Aerial Photographs</p> <p><u> </u> Other</p> <p><u> x </u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u> </u> (in.)</p> <p>Depth to Free Water in Pit: <u> </u> (in.)</p> <p>Depth to Saturated Soil: <u> </u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><u> </u> Inundated</p> <p><u> </u> Saturated in Upper 12 Inches</p> <p><u> </u> Water Marks</p> <p><u> </u> Drift Lines</p> <p><u> </u> Sediment Deposits</p> <p><u> </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><u> </u> Oxidized Root Channels in Upper 12 Inches</p> <p><u> </u> Water-Stained Leaves</p> <p><u> </u> Local Soil Survey Data</p> <p><u> </u> FAC-Neutral Test</p> <p><u> </u> Other (Explain in Remarks)</p>
<p>Remarks:</p> <p>Sampling point has moist soils, but not saturated.</p>	

SOILS

Map Unit Name (Series and Phase): _____ Taxonomy (Subgroup): <u>NA</u>				Drainage Class: _____ Field Observations Confirm Mapped Type? _____ Yes <u>x</u> No	
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 6	A	10 YR 3/2	-	-	Clay loam
6 – 12+	B	10 YR 4/2	-	-	Sandy clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
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Low chroma-colors present , evidence of hydric condition.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>x</u> Yes <u> </u> No Wetland Hydrology Present? <u> </u> Yes <u>x</u> No Hydric Soils Present? <u>x</u> Yes <u> </u> No	Is this Sampling Point Within a Wetland? _____ Yes <u>x</u> No
Remarks: The sampling area is located along the fringe between open water/shoreline and upland slopes. Vegetation was dominated mostly by upland species. The obligate species present were observed in only trace amounts and located closer to waters edge. This area was still occupied by mostly upland grasses and did not warrant separate types.	

Approved by HQUSACE 2/92

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Peterson Ranch</u> Applicant/Owner: <u>MDT</u> Investigator: <u>Greg Howard</u>	Date: <u>7/30/02</u> County: <u>Granite</u> State: <u>MT</u>
Do Normal Circumstances exist on the site: <u> x </u> Yes <u> </u> No Is the site significantly disturbed (Atypical Situation)? <u> </u> Yes <u> </u> No Is the area a potential Problem Area?: <u> </u> Yes <u> </u> No (If needed, explain on reverse.)	Community ID: <u> </u> Transect ID: <u> 3 – Pool 1 </u> Plot ID: <u> 1 </u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	<i>Phleum pratense</i>	H	FACU	9			
2	<i>Agrostis alba</i>	H	FAC+	10			
3	<i>Veronica americana</i>	H	OBL	11			
4	<i>Alopecurus pratensis</i>	H	FACW	12			
5	<i>Juncus balticus</i>	H	OBL	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 4/5 = 80%

Area dominated by hydrophytic vegetation.

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p><u> </u> Stream, Lake, or Tide Gauge</p> <p><u> </u> Aerial Photographs</p> <p><u> </u> Other</p> <p><u> </u> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u> 2 </u> (in.)</p> <p>Depth to Free Water in Pit: <u> - </u> (in.)</p> <p>Depth to Saturated Soil: <u> - </u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><u> x </u> Inundated</p> <p><u> </u> Saturated in Upper 12 Inches</p> <p><u> </u> Water Marks</p> <p><u> </u> Drift Lines</p> <p><u> </u> Sediment Deposits</p> <p><u> </u> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><u> </u> Oxidized Root Channels in Upper 12 Inches</p> <p><u> </u> Water-Stained Leaves</p> <p><u> </u> Local Soil Survey Data</p> <p><u> </u> FAC-Neutral Test</p> <p><u> </u> Other (Explain in Remarks)</p>
<p>Remarks:</p> <p>Area inundated with standing water, saturated outer edges.</p>	

SOILS

Map Unit Name (Series and Phase): _____ Taxonomy (Subgroup): <u>NA</u>				Drainage Class: _____ Field Observations Confirm Mapped Type? _____ Yes <u>X</u> No	
Profile Description:					
Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 2	A1	10 YR 3/2	-	-	Roots w/loam
2 – 4	A2	10 YR 3/2	-	-	Clay loam
4 – 10+	B	10 YR 4/3	-	-	Sandy clay
Large cobbles, small to medium gravels & cobbles.					
Hydric Soil Indicators: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input checked="" type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors </div> <div style="width: 45%;"> <input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks) </div> </div>					
Evidence of hydric soils, low chroma -colors and aquic moisture regime.					

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <u>X</u> Yes _____ No Wetland Hydrology Present? <u>X</u> Yes _____ No Hydric Soils Present? <u>X</u> Yes _____ No	Is this Sampling Point Within a Wetland? <u>X</u> Yes _____ No
Remarks: Sampling point is considered a wetland. Upper basin of created wetland pond # 1. Surface water present, flowing down gradient into pond. Hydrology source comes from irrigation ditch. Low vegetation cover, few drier species mixed with mostly wetland species.	

Approved by HQUSACE 2/92

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project Name: Peterson Ranch 2. Project #: 130091.010 Control #: _____3. Evaluation Date: Mo. 7 Day 30 Yr. 02 4. Evaluator(s): Greg Howard 5. Wetlands/Site #(s): Pond #1 & adjacent Emergent wetlands west of irrigation ditch.6. Wetland Location(s): I. Legal: T 10 N or S; R 13 E or W; S 35; T _____ N or S; R _____ E or W; S _____
II. Approx. Stationing or Mileposts: _____7. Watershed: L7010202 GPS Reference No. (if applies): _____
Other Location Information: _____7. a. Evaluating Agency: MDT; 8. Wetland size: (total acres) 720 acres (visually estimated)
b. Purpose of Evaluation: _____ (measured, e.g. by GPS [if applies])
1. _____ Wetlands potentially affected by MDT project
2. _____ Mitigation wetlands; pre-construction
3. ☒ Mitigation wetlands; post-construction
4. _____ Other
9. Assessment area: (AA, tot., ac., 7.0 ac. (visually estimated)
see instructions on determining AA) _____ (measured, e.g. by GPS [if applies])

10. Classification of Wetland and Aquatic Habitats in AA (HGM according to Brinson, first col.; USFWS according to Cowardin [1979], remaining cols.)

HGM Class	System	Subsystem	Class	Water Regime	Modifier	% of AA
<u>Riverine</u>	<u>Palustrine</u>	<u>-</u>	<u>EM</u>	<u>C & B</u>	<u>A & E</u>	<u>60 %</u>
<u>" "</u>	<u>Palustrine</u>	<u>-</u>	<u>US</u>	<u>H & C</u>	<u>A & E</u>	<u>40 %</u>

(Abbreviations: System: Palustrine (P) Subsystem: none/ Classes: Rock Bottom (RB), Unconsolidated bottom (UB), Aquatic Bed (AB), Unconsolidated Shore (US), Moss-lichen Wetland (ML), Emergent Wetland (EM), Scrub-Shrub Wetland (SS), Forested Wetland (FO) System: Lacustrine (LV), Subsystem: Limnetic (2) Classes: RB, UB, AB/ Subsystem: Littoral (4) Classes: RB, UB, AB, US, EM/ System: Riverine (RV) Subsystem: Lower Perennial (2) Classes: RB, UB, AB, US, EM/ Subsystem: Upper Perennial (3) Classes: RB, UB, AB, US/ Water Regimes: Permanently Flooded (H), Intermittently Flooded (G), Semipermanently Flooded (F), Seasonally Flooded (C), Saturated (B), Temporarily Flooded (A), Intermittently Flooded (J) Modifiers: Excavated (E), Impounded (I), Diked (D), Partly Drained (PD), Farmed (F), Artificial (A) HGM Classes: Riverine, Depressional, Slope, Mineral Soil Flats, Organic Soil Flats, Lacustrine Fringe

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
(Circle one) Unknown Rare Common Abundant
Comments: _____

12. General condition of AA:

I. Regarding disturbance: (use matrix below to determine [circle] appropriate response)

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

Comments: (types of disturbance, intensity, season, etc.): Surrounding conditions are livestock grazing to the west and timber mill to the east.II. Prominent weedy, alien, & introduced species (including those not domesticated, feral): (list) spotted Knapweed, Canada thistle, & hounds tongue.

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

Hydrology influenced by irrigation ditches & ground water. Area consists of one open water/ emergent wetland ponds & extensive wet meadow.

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

# of "Cowardin" vegetated classes present in AA (see #10)	≥ 3 vegetated classes (or ≥ 2 if one is forested)	2 vegetated classes (or 1 if forested)	≤ 1 vegetated class
Rating (circle)	High	Moderate	<u>Low</u>

Comments: _____

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

LAND & WATER B-27

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

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

D S

Bald Eagle

II. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus./primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	.9 (H)	.8 (M)	.7 (M)	.5 (L)	.3 (L)	0 (L)

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

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

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

D S

II. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus./primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	.8 (H)	.7 (M)	.6 (M)	.2 (L)	.1 (L)	0 (L)

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

14C. General Wildlife Habitat Rating:

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

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

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

Low (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, circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) rating. Structural diversity is from #13. For class cover to be considered evenly distributed, 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			
	Even				Uneven				Even				Uneven				Even			
Class cover distribution (all vegetated classes)	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
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 [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

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

Comments:

14D. General Fish/Aquatic 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 or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

I. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading - 50 to 75% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - < 50% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

II. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E = H, H = M, M = L, L = L]). Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support? Y N Modified habitat quality rating = (circle) E H M L

III. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

Types of fish known or suspected within AA	Modified Habitat Quality (ii)			
	Exceptional	High	Moderate	Low
Native game fish	1 (E)	.9 (H)	.7 (M)	.5 (M)
Introduced game fish	.9 (H)	.8 (H)	.6 (M)	.4 (M)
Non-game fish	.7 (M)	.6 (M)	.5 (M)	.3 (L)
No fish	.5 (M)	.3 (L)	.2 (L)	.1 (L)

Comments: no useable fish habitat

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle NA here and proceed to next function.)

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

Estimated wetland area in AA subject to periodic flooding	≥ 10 acres			<10, ≥2 acres			<2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1(H)	.9(H)	.6(M)	.8(H)	.7(H)	.5(M)	.4(M)	.3(L)	.2(L)
AA contains unrestricted outlet	.9(H)	.8(H)	.5(M)	.7(H)	.6(M)	.4(M)	.3(L)	.2(L)	.1(L)

II. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA (circle)? Y N

Comments: Low % scrub-shrub in this AA. Does contain restricted outlet.

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, circle NA here and proceed with the evaluation.)

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. 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			<5, ≥1 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	1(H)	.9(H)	.8(H)	.8(H)	.6(M)	.5(M)	.4(M)	.3(L)	.2(L)
Wetlands in AA flood or pond < 5 out of 10 years	.9(H)	.8(H)	.7(M)	.7(M)	.5(M)	.4(M)	.3(L)	.2(L)	.1(L)

Comments: New ponds with high capacity to contain water during Seasonal Flooding of Flint Creek.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive excess 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, circle NA here and proceed with the evaluation.)

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

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds 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 or ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains no or restricted outlet	1 (H)	.8 (H)	.7 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)
AA contains unrestricted outlet	.9 (H)	.7 (M)	.6 (M)	.4 (M)	.4 (M)	.3 (L)	.2 (L)	.1 (L)

Comments: Low % vegetation cover around ponds.

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

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses	Duration of surface water adjacent to rooted vegetation		
	permanent / perennial	seasonal / intermittent	Temporary / ephemeral
≥ 65%	1 (H)	.9 (H)	.7 (M)
35-64%	.7 (M)	.6 (M)	.5 (M)
< 35%	.3 (L)	.2 (L)	.1 (L)

Comments: Lack of any vegetation along shore-line. no deep binding Root systems.

14I. Production Export/Food Chain Support:

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; 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 = permanent/perennial; S/I = seasonal/intermittent; T/E/A = temporary/ephemeral or 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	1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7M	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

14J. Groundwater Discharge/Recharge: (Check the indicators in i & ii below that apply to the AA)

I. Discharge Indicators

- ☐ Springs 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
- ☐ Other

II. Recharge Indicators

- ☒ Permeable substrate present without underlying impeding layer
- ☒ Wetland contains inlet but no outlet
- ☐ Other

III. Rating: Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H = high, L = low] for this function.

Criteria	Functional Points and Rating
AA is known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	N/A (Unknown)

Comments: High groundwater table, irrigation influenced & subsurface flow through alluvial materials.

14K. Uniqueness:

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

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

Comments:

14L. Recreation/Education Potential: I. Is the AA a known rec./ed. site: (circle) Y N (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

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

III. Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use? Y N

(If yes, go to ii, then proceed to iv; if no, then rate as [circle] Low [0.1])

IV. Rating (use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Ownership	Disturbance at AA (#12)		
	low	moderate	high
public ownership	1 (H)	.5 (M)	.2 (L)
private ownership	.7 (M)	.3 (L)	.1 (L)

Comments:

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	Low	0.3	1	
B. MT Natural Heritage Program Species Habitat	none	0.0	1	
C. General Wildlife Habitat	mod	0.5	1	
D. General Fish/Aquatic Habitat	NA	NA	0	
E. Flood Attenuation	mod	0.5	1	
F. Short and Long Term Surface Water Storage	High	0.8	1	
G. Sediment/Nutrient/Toxicant Removal	mod	0.7	1	
H. Sediment/Shoreline Stabilization	Low	0.3	1	
I. Production Export/Food Chain Support	High	0.8	1	
J. Groundwater Discharge/Recharge	High	1.0	1	
K. Uniqueness	Low	0.3	1	
L. Recreation/Education Potential	Low	0.3	1	
Totals:		5.5	11	

50%

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below) I II **III** IV

Category I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, 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
- ☐ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.

Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)

- ☐ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; or
- ☐ Score of .9 or 1 functional point for General Fish/Aquatic 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
- ☐ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)

- ☐ "Low" rating for Uniqueness; and
- ☐ "Low" rating for Production Export/Food Chain Support; and
- ☐ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project Name: Peterson Ranch 2. Project #: 130091.010 Control #: _____3. Evaluation Date: Mo. 7 Day 30 Yr. 02 4. Evaluator(s): Greg Howard 5. Wetlands/Site #(s): Mature Scrub-Shrub along Irrigation ditch6. Wetland Location(s): I. Legal: T 100 N or S; R 13 E or W; S 35; T _____ N or S; R _____ E or W; S _____; II. Approx. Stationing or Mileposts: _____III. Watershed: 17010302 GPS Reference No. (if applies): _____
Other Location Information: _____7. a. Evaluating Agency: MDT; 8. Wetland size: (total acres) 220 (visually estimated)
b. Purpose of Evaluation: _____ (measured, e.g. by GPS [if applies])
1. _____ Wetlands potentially affected by MDT project
2. _____ Mitigation wetlands; pre-construction
3. X Mitigation wetlands; post-construction
4. _____ Other
9. Assessment area: (AA, tot., ac., 3.0 ac. (visually estimated)
see instructions on determining AA) _____ (measured, e.g. by GPS [if applies])

10. Classification of Wetland and Aquatic Habitats in AA (HGM according to Brinson, first col.; USFWS according to Cowardin [1979], remaining cols.)

HGM Class	System	Subsystem	Class	Water Regime	Modifier	% of AA
<u>Riverine</u>	<u>Palustrine</u>	-	<u>SS</u>	<u>C+B</u>	<u>A</u>	<u>80%</u>
" "	<u>Palustrine</u>	-	<u>EM</u>	<u>C+B</u>	<u>A</u>	<u>15%</u>
" "	<u>Palustrine</u>	-	<u>RB</u>	<u>C+B</u>	<u>A</u>	<u>5%</u>

(Abbreviations: System: Palustrine (P), Subsystem: none/ Classes: Rock Bottom (RB), Unconsolidated bottom (UB), Aquatic Bed (AB), Unconsolidated Shore (US), Moss-lichen Wetland (ML), Emergent Wetland (EM), Scrub-Shrub Wetland (SS), Forested Wetland (FO); System: Lacustrine (L), Subsystem: Limnetic (2) Classes: RB, UB, AB/ Subsystem: Littoral (4) Classes: RB, UB, AB, US, EM/ System: Riverine (R) Subsystem: Lower Perennial (2) Classes: RB, UB, AB, US, EM/ Subsystem: Upper Perennial (3) Classes: RB, UB, AB, US/ Water Regimes: Permanently Flooded (H), Intermittently Flooded (G), Semipermanently Flooded (F), Seasonally Flooded (C), Saturated (B), Temporarily Flooded (A), Intermittently Flooded (J) Modifiers: Excavated (E), Impounded (I), Diked (D), Partly Drained (PD), Farmed (F), Artificial (A) HGM Classes: Riverine, Depressional, Slope, Mineral Soil Flats, Organic Soil Flats, Lacustrine Fringe

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
(Circle one) Unknown Rare Common Abundant
Comments: _____

12. General condition of AA:

I. Regarding disturbance: (use matrix below to determine [circle] appropriate response)

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

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

II. Prominent weedy, alien, & introduced species (including those not domesticated, feral): (list) _____

III. Provide brief descriptive summary of AA and surrounding land use/habitat: _____

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

# of "Cowardin" vegetated classes present in AA (see #10)	≥ 3 vegetated classes (or ≥ 2 if one is forested)	2 vegetated classes (or 1 if forested)	≤ 1 vegetated class
Rating (circle)	High	<u>Moderate</u>	Low

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 (circle 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 Bald Eagle
 No usable habitat D S _____

II. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus./primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	.9 (H)	.8 (M)	.7 (M)	.5 (L)	<u>.3 (L)</u>	0 (L)

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

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

I. AA is Documented (D) or Suspected (S) to contain (circle 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 Olive-sided Flycatcher
 No usable habitat D S _____

II. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus./primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	.8 (H)	.7 (M)	.6 (M)	.2 (L)	<u>.1 (L)</u>	0 (L)

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

14C. General Wildlife Habitat Rating:

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

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

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

Low (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, circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) rating. Structural diversity is from #13. For class cover to be considered evenly distributed, 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			
	Even				Uneven				Even				Uneven				Even			
Class cover distribution (all vegetated classes)	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
Duration of surface water in ≥ 10% of AA	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Low disturbance at AA (see #12)	H	H	H	H	H	H	H	M	H	H	M	M	<u>H</u>	M	M	L	H	M	L	L
Moderate disturbance at AA (see #12)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L
High disturbance at AA (see #12)																				

III. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

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

Comments:

14D. General Fish/Aquatic 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 or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading - 50 to 75% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - < 50% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E = H, H = M, M = L, L = L]). Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support? Y N Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

Types of fish known or suspected within AA	Modified Habitat Quality (ii)			
	Exceptional	High	Moderate	Low
Native game fish	1 (E)	.9 (H)	.7 (M)	.5 (M)
Introduced game fish	.9 (H)	.8 (H)	.6 (M)	.4 (M)
Non-game fish	.7 (M)	.6 (M)	.5 (M)	.3 (L)
No fish	.5 (M)	.3 (L)	.2 (L)	.1 (L)

Comments: No useable fish habitat.

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle NA here and proceed to next function.)

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

Estimated wetland area in AA subject to periodic flooding	> 10 acres			<10, >2 acres			<2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1(H)	.9(H)	.6(M)	.8(H)	.7(H)	.5(M)	.4(M)	.3(L)	.2(L)
AA contains unrestricted outlet	.9(H)	.8(H)	.5(M)	.7(H)	.6(M)	.4(M)	.3(L)	.2(L)	.1(L)

ii. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA (circle)? Y N

Comments: Irrigation ditch w/ outlet into Flint Creek.

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

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. 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			<5, >1 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	1(H)	.9(H)	.8(H)	.8(H)	.6(M)	.5(M)	.4(M)	.3(L)	.2(L)
Wetlands in AA flood or pond < 5 out of 10 years	.9(H)	.8(H)	.7(M)	.7(M)	.5(M)	.4(M)	.3(L)	.2(L)	.1(L)

Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive excess 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, circle NA here and proceed with the evaluation.)

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

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds 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 or ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains no or restricted outlet	1 (H)	.8 (H)	.7 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)
AA contains unrestricted outlet	.9 (H)	.7 (M)	.6 (M)	.4 (M)	.4 (M)	.3 (L)	.2 (L)	.1 (L)

Comments: High % vegetation cover w/ mature willow community.

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

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses	Duration of surface water adjacent to rooted vegetation		
	permanent / perennial	seasonal / intermittent	Temporary / ephemeral
> 65%	1 (H)	.9 (H)	.7 (M)
35-64%	.7 (M)	.6 (M)	.5 (M)
< 35%	.3 (L)	.2 (L)	.1 (L)

Comments: mature willows w/ deep binding roots along irrigation ditch.

14I. Production Export/Food Chain Support:

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; 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 = permanent/perennial; S/I = seasonal/intermittent; T/E/A = temporary/ephemeral or absent (see instructions for further definitions of these terms).)

A	Vegetated component >5 acres						Vegetated component 1-5 acres						Vegetated component <1 acre					
	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	.1H	.9H	.9H	.8H	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.7M	.7M	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

14J. Groundwater Discharge/Recharge: (Check the indicators in i & ii below that apply to the AA)

i. Discharge Indicators

- ☐ Springs 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
- ☐ Other

ii. Recharge Indicators

- ☒ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Other

III. Rating: Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H = high, L = low] for this function.

Criteria	Functional Points and Rating
AA is known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	N/A (Unknown)

Comments:

14K. Uniqueness:

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

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

Comments:

14L. Recreation/Education Potential: I. Is the AA a known rec./ed. site: (circle) Y N (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

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

III. Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use? Y N

(If yes, go to ii, then proceed to iv; if no, then rate as [circle] Low [0.1])

IV. Rating (use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Ownership	Disturbance at AA (#12)		
	low	moderate	high
public ownership	1 (H)	.5 (M)	.2 (L)
private ownership	.7 (M)	.3 (L)	.1 (L)

Comments:

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	Low	0.3	1	
B. MT Natural Heritage Program Species Habitat	Low	0.1	1	
C. General Wildlife Habitat	mod	0.7	1	
D. General Fish/Aquatic Habitat	NA	NA	0	
E. Flood Attenuation	Low	0.2	1	
F. Short and Long Term Surface Water Storage	High	0.8	1	
G. Sediment/Nutrient/Toxicant Removal	High	0.9	1	
H. Sediment/Shoreline Stabilization	High	1.0	1	
I. Production Export/Food Chain Support	High	0.8	1	
J. Groundwater Discharge/Recharge	High	1.0	1	
K. Uniqueness	Low	0.3	1	
L. Recreation/Education Potential	Low	0.3	1	
Totals:		6.4	11	

58%

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below) I II III IV

Category I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, 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
- ___ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.

Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)

- ___ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or
- ___ Score of .9 or 1 functional point for General Wildlife Habitat; or
- ___ Score of .9 or 1 functional point for General Fish/Aquatic 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
- ___ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)

- ___ "Low" rating for Uniqueness; and
- ___ "Low" rating for Production Export/Food Chain Support; and
- ___ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

MDT Montana Wetland Assessment Form (revised 5/25/1999)

1. Project Name: Peterson Ranch 2. Project #: 130091-010 Control #: _____3. Evaluation Date: Mo. 7 Day 30 Yr. 02 4. Evaluator(s): Greg Howard 5. Wetlands/Site #(s) Pond # 3, 4, & 56. Wetland Location(s): I. Legal: T 10 (N or S; R 13 (E or W; S 35); T _____ N or S; R _____ E or W; S _____;
II. Approx. Stationing or Mileposts: _____III. Watershed: 17010202 GPS Reference No. (if applies): _____
Other Location Information: _____7. a. Evaluating Agency: MDT 8. Wetland size: (total acres) 220 (visually estimated)
b. Purpose of Evaluation: _____ (measured, e.g. by GPS [if applies])
1. _____ Wetlands potentially affected by MDT project
2. _____ Mitigation wetlands; pre-construction
3. ☒ Mitigation wetlands; post-construction
4. _____ Other
9. Assessment area: (AA, tot., ac., 1380 ac. (visually estimated)
see instructions on determining AA) _____ (measured, e.g. by GPS [if applies])

10. Classification of Wetland and Aquatic Habitats in AA (HGM according to Brinson, first col.; USFWS according to Cowardin [1979], remaining cols.)

HGM Class	System	Subsystem	Class	Water Regime	Modifier	% of AA
<u>Riverine</u>	<u>Palustrine</u>	<u>-</u>	<u>EM</u>	<u>H/C E B</u>	<u>E</u>	<u>70%</u>
<u>" "</u>	<u>palustrine</u>		<u>4S</u>	<u>H & C</u>	<u>E</u>	<u>30%</u>

(Abbreviations: System: Palustrine (P) Subsystem: none/ Classes: Rock Bottom (RB), Unconsolidated bottom (UB), Aquatic Bed (AB), Unconsolidated Shore (US), Moss-lichen Wetland (ML), Emergent Wetland (EM), Scrub-Shrub Wetland (SS), Forested Wetland (FO) System: Lacustrine (LV) Subsystem: Limnetic (2) Classes: RB, UB, AB/ Subsystem: Littoral (4) Classes: RB, UB, AB, US, EM/ System: Riverine (RV) Subsystem: Lower Perennial (2) Classes: RB, UB, AB, US, EM/ Subsystem: Upper Perennial (3) Classes: RB, UB, AB, US/ Water Regimes: Permanently Flooded (H), Intermittently Exposed (G), Semipermanently Flooded (F), Seasonally Flooded (C), Saturated (B), Temporarily Flooded (A), Intermittently Flooded (J) Modifiers: Excavated (E), Impounded (I), Diked (D), Partly Drained (PD), Farmed (F), Artificial (A) HGM Classes: Riverine, Depressional, Slope, Mineral Soil Flats, Organic Soil Flats, Lacustrine Fringe

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
(Circle one) Unknown Rare Common Abundant
Comments: _____

12. General condition of AA:

I. Regarding disturbance: (use matrix below to determine [circle] appropriate response)

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

Comments: (types of disturbance, intensity, season, etc.): Historic grazingII. Prominent weedy, alien, & introduced species (including those not domesticated, feral): (list) Spotted knapweed, Canada thistle, & hounds tongue

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

Hydrology influenced by seasonal flooding of adjacent side channel & Grand water. Surrounding land uses grazing & timber mill. Area has three created wetland ponds.

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

# of "Cowardin" vegetated classes present in AA (see #10)	≥ 3 vegetated classes (or ≥ 2 if one is forested)	2 vegetated classes (or 1 if forested)	≤ 1 vegetated class
Rating (circle)	High	Moderate	<u>Low</u>

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 (circle 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 Bald Eagle
 No usable habitat D S _____

II. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus./primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	.9 (H)	.8 (M)	.7 (M)	.5 (L)	<u>.3 (L)</u>	0 (L)

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

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

I. AA is Documented (D) or Suspected (S) to contain (circle 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 D S _____

II. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Highest Habitat Level	doc./primary	sus./primary	doc./secondary	sus./secondary	doc./incidental	sus./incidental	None
Functional Points and Rating	1 (H)	.8 (H)	.7 (M)	.6 (M)	.2 (L)	.1 (L)	<u>0 (L)</u>

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

14C. General Wildlife Habitat Rating:

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

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

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

Low (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, circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) rating. Structural diversity is from #13. For class cover to be considered evenly distributed, 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			
	Even				Uneven				Even				Uneven				Even			
Class cover distribution (all vegetated classes)	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
Duration of surface water in ≥ 10% of AA																				
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	<u>H</u>	M	M	L	<u>H</u>	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 [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

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

Comments:

14D. General Fish/Aquatic 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 or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i] below should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.)

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	H	H	H	M	M	M	M
Shading - 50 to 75% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading - < 50% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in i above by one level [E = H, H = M, M = L, L = NA]). Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support? Y N Modified habitat quality rating = (circle) E H M L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

Types of fish known or suspected within AA	Modified Habitat Quality (ii)			
	Exceptional	High	Moderate	Low
Native game fish	1 (E)	.9 (H)	.7 (M)	.5 (M)
Introduced game fish	.9 (H)	.8 (H)	.6 (M)	.4 (M)
Non-game fish	.7 (M)	.6 (M)	.5 (M)	.3 (L)
No fish	.5 (M)	.3 (L)	.2 (L)	.1 (L)

Comments: No useable Fish habitat.

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle NA here and proceed to next function.)

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

Estimated wetland area in AA subject to periodic flooding	> 10 acres			<10, >2 acres			<2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1(H)	.9(H)	.6(M)	.8(H)	.7(H)	.5(M)	.4(M)	.3(L)	.2(L)
AA contains unrestricted outlet	.9(H)	.8(H)	.5(M)	.7(H)	.6(M)	.4(M)	.3(L)	.2(L)	.1(L)

ii. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA (circle)? Y N
Comments: low % cover of vegetation

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, circle NA here and proceed with the evaluation.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. 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			<5, >1 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	1(H)	.9(H)	.8(H)	.8(H)	.6(M)	.5(M)	.4(M)	.3(L)	.2(L)
Wetlands in AA flood or pond < 5 out of 10 years	.9(H)	.8(H)	.7(M)	.7(M)	.5(M)	.4(M)	.3(L)	.2(L)	.1(L)

Comments: moderate capacity to contain waters within wetland.

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive excess 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, circle NA here and proceed with the evaluation.)

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

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds 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 or ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains no or restricted outlet	1 (H)	.8 (H)	.7 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)
AA contains unrestricted outlet	.9 (H)	.7 (M)	.6 (M)	.4 (M)	.4 (M)	.3 (L)	.2 (L)	.1 (L)

Comments: medium % cover of vegetation.

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

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function.

% Cover of wetland streambank or shoreline by species with deep, binding rootmasses	Duration of surface water adjacent to rooted vegetation		
	permanent / perennial	seasonal / intermittent	Temporary / ephemeral
≥ 65%	1 (H)	.9 (H)	.7 (M)
35-64%	.7 (M)	.6 (M)	.5 (M)
< 35%	.3 (L)	.2 (L)	.1 (L)

Comments: *Some emergent wetlands*

14I. Production Export/Food Chain Support:

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; 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 = permanent/perennial; S/I = seasonal/intermittent; T/E/A = temporary/ephemeral or absent (see instructions for further definitions of these terms.)

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

Comments:

14J. Groundwater Discharge/Recharge: (Check the indicators in i & ii below that apply to the AA)

I. Discharge Indicators

- ☐ Springs 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
- ☐ Other

II. Recharge Indicators

- ☒ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Other

III. Rating: Use the information from i and ii above and the table below to arrive at [circle] the functional points and rating [H = high, L = low] for this function.

Criteria	Functional Points and Rating
AA is known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	N/A (Unknown)

Comments: *Ground water subsurface flow, highly permeable alluvial substrate.*

14K. Uniqueness:

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

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

Comments:

14L. Recreation/Education Potential: I. Is the AA a known rec./ed. site: (circle) Y N (If yes, rate as [circle] High [1] and go to ii; if no go to iii)

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

III. Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use? Y N

(If yes, go to ii, then proceed to iv; if no, then rate as [circle] Low [0.1])

IV. Rating (use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Ownership	Disturbance at AA (#12j)		
	low	moderate	high
public ownership	1 (H)	.5 (M)	.2 (L)
private ownership	.7 (M)	.3 (L)	.1 (L)

Comments:

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	Low	0.3	1	
B. MT Natural Heritage Program Species Habitat	none	0.0	1	
C. General Wildlife Habitat	mod.	0.7	1	
D. General Fish/Aquatic Habitat	NA	NA	0	
E. Flood Attenuation	mod.	0.5	1	
F. Short and Long Term Surface Water Storage	High	0.8	1	
G. Sediment/Nutrient/Toxicant Removal	mod.	0.7	1	
H. Sediment/Shoreline Stabilization	mod.	0.7	1	
I. Production Export/Food Chain Support	High	0.8	1	
J. Groundwater Discharge/Recharge	High	1.0	1	
K. Uniqueness	Low	0.3	1	
L. Recreation/Education Potential	Low	0.3	1	
Totals:		6.1	11	

55%

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below) I II III IV

Category I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, 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
- ___ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.

Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)

- ___ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or
- ___ Score of .9 or 1 functional point for General Wildlife Habitat; or
- ___ Score of .9 or 1 functional point for General Fish/Aquatic 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
- ___ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)

- ___ "Low" rating for Uniqueness; and
- ___ "Low" rating for Production Export/Food Chain Support; and
- ___ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

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Project Name		Peterson 1
Date		7/31/2002
Ephemeroptera	Baetidae	<i>Callibaetis</i> 1
Homoptera	Corixidae	<i>Sigara</i> 3
Diptera	Chironomidae	<i>Procladius</i> 1
Total		5
Total taxa		3
POET		1
Chironomidae taxa		1
Crustacea taxa + Mollusca taxa		0
% Chironomidae		20.00%
Orthocladiinae/Chironomidae		0.00
%Amphipoda		0.00%
%Crustacea + %Mollusca		0.00%
HBI		7.60
%Dominant taxon		60.00%
%Collector-Gatherers		20.00%
%Filterers		0.00%
Scores (2002 criteria)		
Total taxa		1
POET		1
Chironomidae taxa		1
Crustacea taxa + Mollusca taxa		1
% Chironomidae		3
Orthocladiinae/Chironomidae		1
%Amphipoda		5
%Crustacea + %Mollusca		5
HBI		3
%Dominant taxon		1
%Collector-Gatherers		1
%Filterers		1
Total score		24

Peterson 1: The sample yielded few organisms, rendering bioassessment results unreliable. The dearth of organisms suggested that poor water quality and/or limited habitats affected invertebrate assemblages.

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for Land and Water Consulting 2002		Project Name	Peterson 2
		Date	7/31/2002
Crustacea	Copepoda	Cyclopoida	4
	Ostracoda	Ostracoda	1
Ephemeroptera	Baetidae	Callibaetis	3
Homoptera	Corixidae	Corixidae - immature	7
		Sigara	4
	Notonectidae	Notonecta	1
Coleoptera	Dytiscidae	Dytiscidae - early instar larvae	3
		Laccophilus	3
		Stichtotarsus	6
	Hydrophilidae	Berosus	1
		Tropisternus	2
		Diptera	Chironomidae
Acricotopus	4		
Microtendipes	12		
Psectrocladius elatus	17		
Psectrocladius vernalis	90		
Tanytarsus	18		
Total	177		
		Total taxa	17
		POET	1
		Chironomidae taxa	6
		Crustacea taxa + Mollusca taxa	2
		% Chironomidae	80.23%
		Orthocladiinae/Chironomidae	0.78
		%Amphipoda	0.00%
		%Crustacea + %Mollusca	2.82%
		HBI	7.32
		%Dominant taxon	50.85%
		%Collector-Gatherers	84.75%
		%Filterers	0.00%
		Scores (2002 criteria)	
		Total taxa	3
		POET	1
		Chironomidae taxa	3
		Crustacea taxa + Mollusca taxa	1
		% Chironomidae	1
		Orthocladiinae/Chironomidae	5
		%Amphipoda	5
		%Crustacea + %Mollusca	5
		HBI	3
		%Dominant taxon	3
		%Collector-Gatherers	5
		%Filterers	1
		Total score	36

Peterson 2: Low taxa richness at this site suggested that habitat complexity maybe limited. The calculated scores from the bioassessment indicated sub-optimal conditions. Although the biotic index value (7.32) implied that water quality was relatively good here, the abundance of the midges *Psectrocladius elatus* and *Psectrocladius vernalis*, which together dominated the midge fauna at the site, suggested that the water is moderately acidic.

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Project Name Peterson 4

Date 7/30/2002

Peterson 4: The sample yielded few organisms, rendering bioassessment results unreliable. Among the animals present, however, the mayfly *Callibaetis* spp. was common, suggesting that water quality was not devastated, and that macrophytes may have contributed to habitat complexity at the site.

Oligochaeta	Naididae	<i>Nais variabilis</i>	1
Gastropoda	Lymnaeidae	<i>Fossaria</i>	3
	Physidae	<i>Physa</i>	1
	Planorbidae	<i>Gyraulus</i>	15
Crustacea	Amphipoda	<i>Gammarus</i>	1
		<i>Hyalella azteca</i>	1
Acarina		Acari	1
Odonata	Libellulidae	<i>Sympetrum</i>	2
	Coenagrionidae	Coenagrionidae-early instar	5
Ephemeroptera	Baetidae	<i>Callibaetis</i>	14
Homoptera	Notonectidae	<i>Notonecta</i>	9
Coleoptera	Dytiscidae	<i>Laccophilus</i>	2
Diptera	Chironomidae	<i>Paratanytarsus</i>	1
		<i>Psectrocladius elatus</i>	4
		<i>Tanytarsus</i>	1

Total 61

Total taxa	15
POET	3
Chironomidae taxa	3
Crustacea taxa + Mollusca taxa	5
% Chironomidae	9.84%
Orthocladinae/Chironomidae	0.67
%Amphipoda	3.28%
%Crustacea + %Mollusca	34.43%
HBI	7.31
%Dominant taxon	24.59%
%Collector-Gatherers	44.26%
%Filterers	0.00%

Scores (2002 criteria)	
Total taxa	3
POET	3
Chironomidae taxa	3
Crustacea taxa + Mollusca taxa	5
% Chironomidae	5
Orthocladinae/Chironomidae	5
%Amphipoda	5
%Crustacea + %Mollusca	3
HBI	3
%Dominant taxon	5
%Collector-Gatherers	1
%Filterers	1

Total score 42

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		Date	7/30/2002
Gastropoda	Lymnaeidae	<i>Fossaria</i>	4
	Physidae	<i>Physa</i>	5
	Planorbidae	<i>Gyraulus</i>	2
Odonata	Coenagrionidae	Coenagrionidae-early instar	2
Ephemeroptera	Baetidae	<i>Callibaetis</i>	4
Diptera	Chironomidae	<i>Chironomus</i>	1
		<i>Cladotanytarsus</i>	8
		<i>Procladius</i>	2
		<i>Tanytarsus</i>	5
		Total	33
		Total taxa	9
		POET	2
		Chironomidae taxa	4
		Crustacea taxa + Mollusca taxa	3
		% Chironomidae	48.48%
Orthoclaadiinae/Chironomidae	0.00		
%Amphipoda	0.00%		
%Crustacea + %Mollusca	33.33%		
HBI	6.97		
%Dominant taxon	24.24%		
%Collector-Gatherers	57.58%		
%Filterers	24.24%		
		Scores (2002 criteria)	
		Total taxa	1
		POET	1
		Chironomidae taxa	3
		Crustacea taxa + Mollusca taxa	1
		% Chironomidae	1
		Orthoclaadiinae/Chironomidae	1
		%Amphipoda	5
		%Crustacea + %Mollusca	5
		HBI	5
		%Dominant taxon	5
		%Collector-Gatherers	3
		%Filterers	5
		Total score	36

Peterson 5: The sample yielded few organisms, rendering bioassessment results unreliable. The dearth of organisms suggests that poor water quality and/or limited habitats affected invertebrate assemblages.

Appendix C

REPRESENTATIVE PHOTOGRAPHS

MDT Wetland Mitigation Monitoring

Peterson Ranch

Hall, Montana



Photo Point No. 1: View looking west across mitigation site. Upland vegetation in foreground.



Photo Point No. 2: View looking west along vegetation transect No. 2. Upland community type in foreground, created wetland pond No. 2 in background.



Photo Point No. 4: View looking southwest across pond No. 4. Emergent wetlands observed around pond fringes and open waters with lower depths.



Photo Point No. 5: View looking north along Transect No. 1. Created wetland pond No. 5 in background. Transect starting point shown in foreground.



Photo Point No. 5: View looking north toward created wetland pond No. 4. Emergent wetlands surrounding ponds fringes and scrub-shrub wetlands.



Photo Point No. 5: View looking south along the top of one of the construction spoil piles. Area dominated by upland grasses and weedy forb species.



Photo Point No. 1: View looking southwest across the northern reaches of the mitigation site. Foreground vegetation dominated by upland species. Upland vegetation spanning across the site ends along the depressional wetland, shown in the upper right side of photo. Far left side of photo shows areas of topographic enhancement, dominated by the same upland species.



Photo Point No. 3: View looking north at southern end of created wetland pond No.2. Side slopes transitioning down towards the open water are dominated by upland species. A vegetation boundary shown in foreground, left side is undisturbed wet meadow and right side is disturbed areas reseeded with upland grass mix.

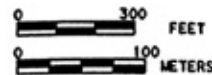


Photo Point No. 3: View looking west, outside the mitigation site boundary. Wet meadow hydrology is fed by irrigation ditches and groundwater.

Appendix D

ORIGINAL SITE PLAN

MDT Wetland Mitigation Monitoring
Peterson Ranch
Hall, Montana



LEGEND

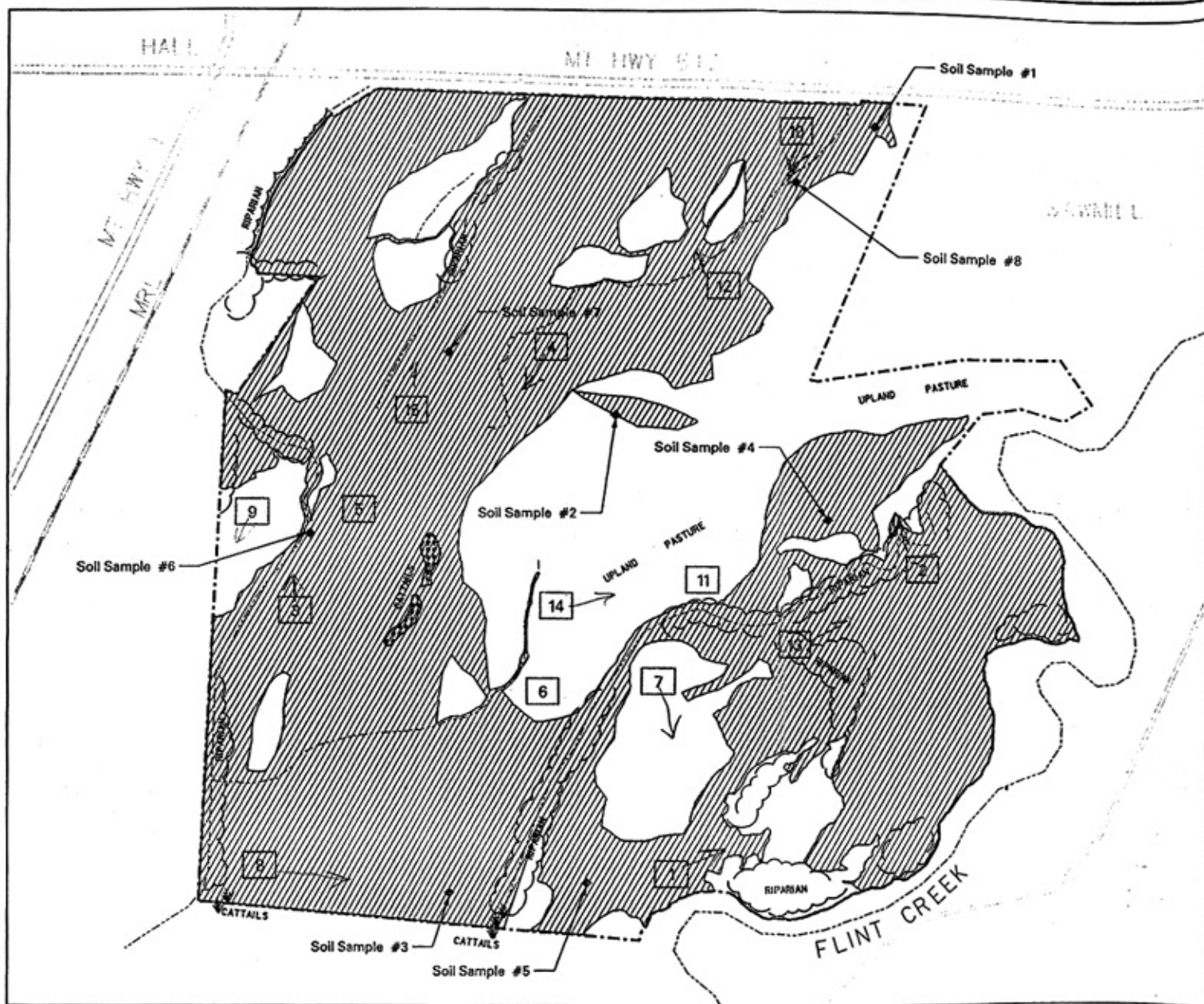
- PROPOSED EASEMENT
- EXISTING WETLAND BOUNDARY
- - - CREEK / IRRIGATION DITCH
- == HIGHWAY
- == ROAD
- ◆ SOIL SAMPLE
- XX PHOTO LOCATION

MAXVILLE-DRUMMOND

PETERSON RANCH WETLAND MITIGATION

EXISTING WETLANDS

MAP SOURCE:
GPS FIELD SURVEY DATA OBTAINED 7/10/98,
AND USGS TIGERLINE DATA OBTAINED FROM
THE MONTANA NRIS WEB SITE.



HALL

MT HWY 512

Soil Sample #1

Soil Sample #8

Soil Sample #7

Soil Sample #4

Soil Sample #2

Soil Sample #6

Soil Sample #3

Soil Sample #5

FLINT CREEK

CATTAILS

CATTAILS

RIPARIAN

UPLAND PASTURE

UPLAND PASTURE

UPLAND

MT HWY 1

MRL

RIPARIAN

RIPARIAN

RIPARIAN

RIPARIAN

RIPARIAN

RIPARIAN

RIPARIAN

RIPARIAN

RIPARIAN

RIPARIAN

RIPARIAN

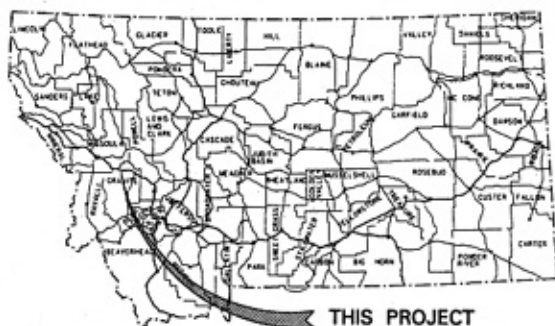
MONTANA DEPARTMENT OF TRANSPORTATION

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	STPX 20 (19)	1

LAND & WATER D-2

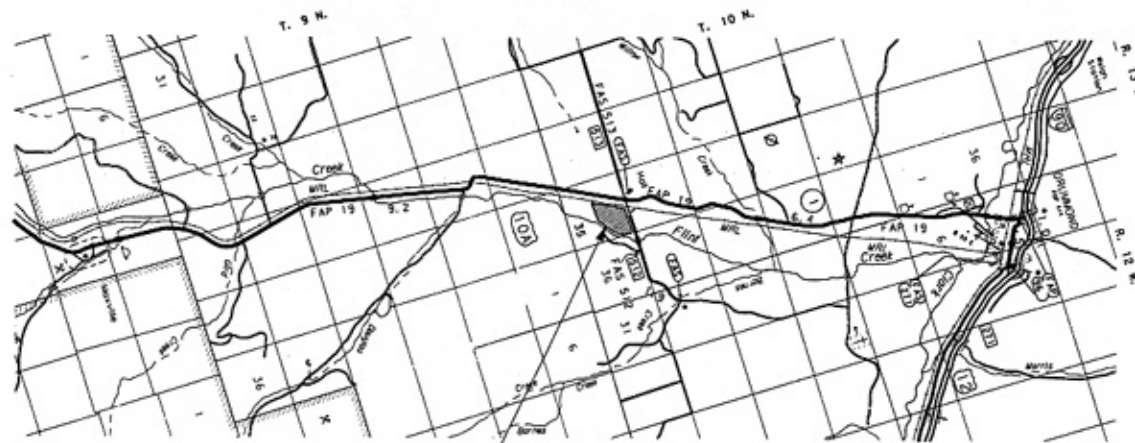
FEDERAL AID PROJECT NO. STPX 20 (19) PETERSON WETLAND MITIGATION PLAN GRANITE COUNTY

RECEIVED
MAY 17 2001
ENVIRONMENTAL



SCALES AS NOTED ON PLANS
REDUCED PRINTS APPROXIMATELY 1/2 ORIGINAL SCALE

RECEIVED
JUN 10 2002
ENVIRONMENTAL



THIS CONTRACT

PLANS PREPARED BY

Carter-Burgess
103 W. FRONT ST. SUITE 103
MISSOULA, MONTANA 59802
(406) 725-1471

WGM Group, Inc.
3021 PALMER
P.O. BOX 18027
MISSOULA, MONTANA 59808-0027
(406) 728-6011

RELATED PROJECTS

MAXVILLE-DRUMMOND
STPP 30-20548

ASSOCIATED PROJECT AGREEMENT NUMBERS

R/W & SC	
P.E.	

WGM Group, Inc.

BY Jeremiah W. Keene

DATE 5/16/01

MONTANA
DEPARTMENT OF TRANSPORTATION

RECEIVED
BY Carl J. Pal May 17, 2001
PRECONSTRUCTION ENGINEER DATE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR

DATE

WGM Group, Inc.

05/16/2001 11:12:26 AM

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NOTES

STATE	PROJECT NUMBER	SHEET NO.
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PROTECTION OF EXISTING WETLANDS

ENCLOSE DESIGNATED CONSTRUCTION AREAS WITH TEMPORARY FENCING. CONSTRUCTION VEHICLES ARE NOT PERMITTED OUTSIDE OF THE CONSTRUCTION AREAS, EXCEPT ON DESIGNATED CONSTRUCTION ACCESS ROADS. MAINTAIN ALL FENCING UNTIL THE COMPLETION OF CONSTRUCTION.

CONSTRUCTION ACCESS AND STAGING

AN EXISTING APPROACH ON HIGHWAY 512 MAY BE USED TO ACCESS THE MAIN IRRIGATION DITCH ON THE WEST SIDE OF THE PROPERTY. A TEMPORARY APPROACH MAY BE CONSTRUCTED TO GAIN ACCESS TO THE SITE FROM HIGHWAY 512 AT THE NORTHEAST CORNER OF THE PROPERTY, ADJACENT TO THE SAWMILL. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE APPROACH FOLLOWING COMPLETION OF CONSTRUCTION.

STORE ALL EQUIPMENT AND MATERIALS WITHIN THE DESIGNATED STAGING AREA PROVIDED SOUTH OF THE CORRAL. CONSTRUCTION ACCESS TO THE STAGING AREA IS SHOWN ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR REVEGETATING ALL DISTURBED AREAS AND STAGING AREAS.

WETLAND TOPSOIL

EXCAVATE WETLAND TOPSOIL FROM WITHIN CONSTRUCTION LIMIT AREAS AND STOCKPILE TOPSOIL IN THE AREAS DESIGNATED ON THE PLANS. PLACE TOPSOIL TO A MINIMUM DEPTH OF 100mm ON BERMS AND SPILL PILES, AND AT VARIABLE DEPTHS RANGING FROM 100mm TO 400mm WITHIN "SHALLOW WATER AREAS" TO CREATE AN UNEVEN NATURAL BOTTOM. DO NOT PLACE TOPSOIL IN "DEEP WATER AREAS". FINISHED GRADE ELEVATIONS DO NOT INCLUDE TOPSOIL.

GRADING

PERFORM ALL EXCAVATION AND EMBANKMENT BY THE METHODS DESCRIBED IN SECTION 203 OF THE STANDARD SPECIFICATIONS. ALL EXCAVATION, INCLUDING MUCK EXCAVATION, AND DITCH EXCAVATION WILL BE PAID FOR AS "UNCLASSIFIED EXCAVATION". EXCAVATION OF SATURATED AND UNSTABLE MATERIAL IS ANTICIPATED IN SOME AREAS, HOWEVER, NO PAYMENT WILL BE MADE FOR "MUCK EXCAVATION". TOPSOIL EXCAVATION IS DEDUCTED FROM THE GRADING QUANTITY.

SEEDING

SEED AREAS SHOWN ON THE PLANS AND OTHER AREAS DISTURBED DURING CONSTRUCTION. SEEDING AREA NO. 1 IS A NATIVE SEED MIX TO BE USED IN ALL NON-WETLAND (CRY) AREAS. SEEDING AREA NO. 2 IS A TRANSITIONAL SEED MIX TO BE USED IN WET AND SEMI-WET AREAS. SEE SPECIAL PROVISIONS.

PLANTING

COLLECT AND PLANT LIVE CUTTINGS FROM SUITABLE WILLOW SPECIES RESIDENT WITHIN THE FLINT CREEK FLOODPLAIN. OBTAIN BAREROOT STOCK FROM A QUALIFIED NURSERY. SUPPLIER OR INSTALLATION CONTRACTOR IS TO HAVE NOT LESS THAN THREE (3) YEARS OF EXPERIENCE IN SUCCESSFULLY COLLECTING AND PLANTING WETLAND PLANT MATERIAL. SEE SPECIAL PROVISIONS.

PLANT WILLOW CUTTINGS AND BAREROOT STOCK AS DIRECTED BY THE ENGINEER IN THE APPROXIMATE LOCATIONS SHOWN ON THE PLANTING PLAN.

FENCING

PERIMETER FENCING IS STANDARD NOT BARBED 5-WIRE FENCE WITH WOODEN POSTS (TYPE F5W). PLACE PERIMETER FENCING ON THE EASEMENT BOUNDARY DEFINED BY THE CERTIFICATE OF SURVEY (C.O.S. 581). INTERIOR FENCING IS STANDARD NOT BARBED 4-WIRE FENCE WITH WOODEN POSTS (TYPE F4W). FINAL PLACEMENT OF INTERIOR FENCING IS SUBJECT TO REVIEW BY THE LANDOWNER.

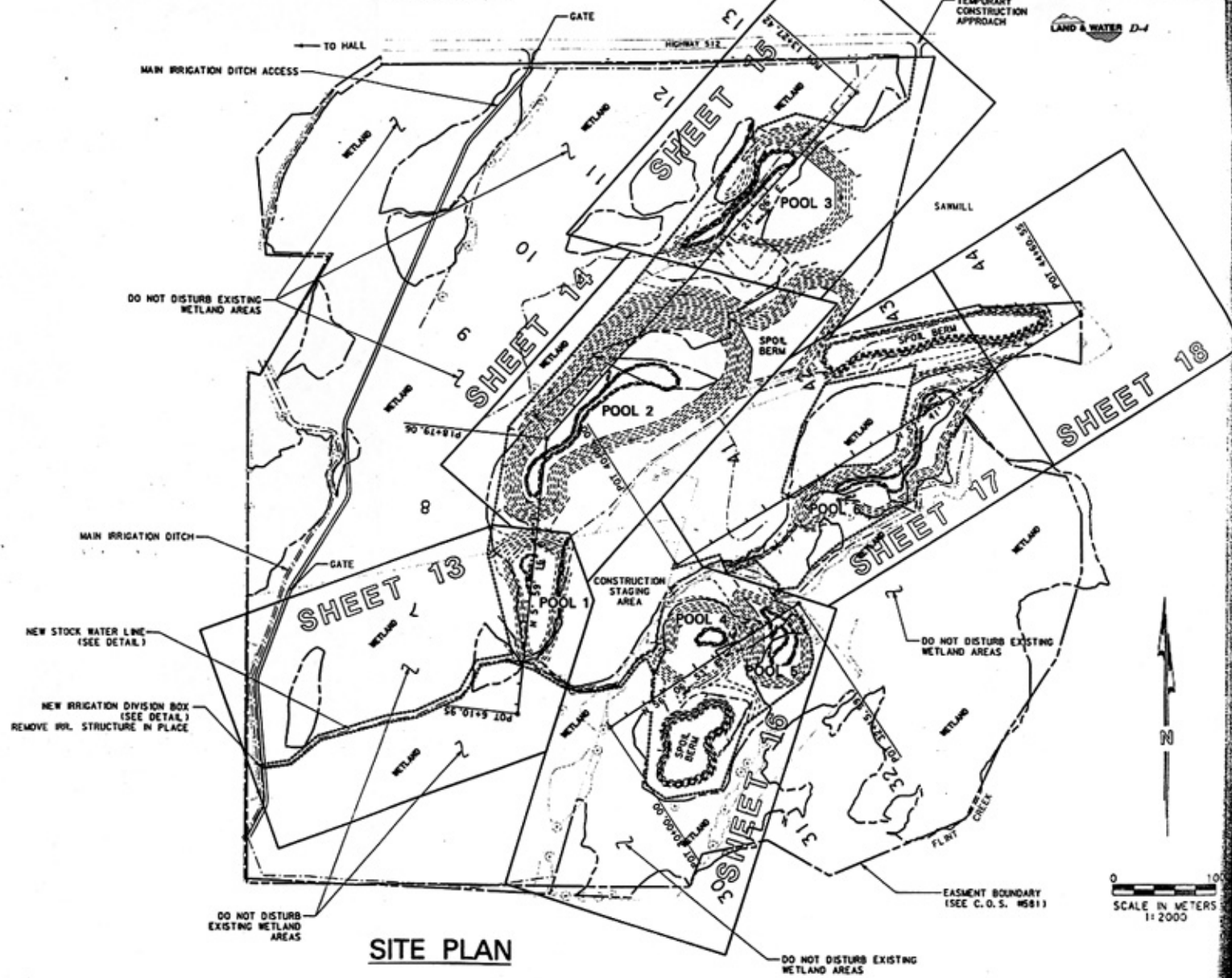
LEGEND

- EASEMENT BOUNDARY
- EXISTING TREES AND SHRUBS
- EXISTING TREE
- EXISTING FENCE
- EXISTING IRRIGATION DITCH
- EXISTING 0.25m CONTOUR
- EXISTING 1.0m CONTOUR
- CONTROL LINE
- TEMPORARY CONSTRUCTION FENCING
- PROPOSED BERM
- PROPOSED BANK PROTECTION
- PROPOSED 0.25m CONTOUR
- PROPOSED 1.0m CONTOUR
- REMOVE FENCE
- PROPOSED FENCE

DETAIL

STATE	PROJECT NUMBER	SHEET
MONTANA	STPX 20 (19)	1

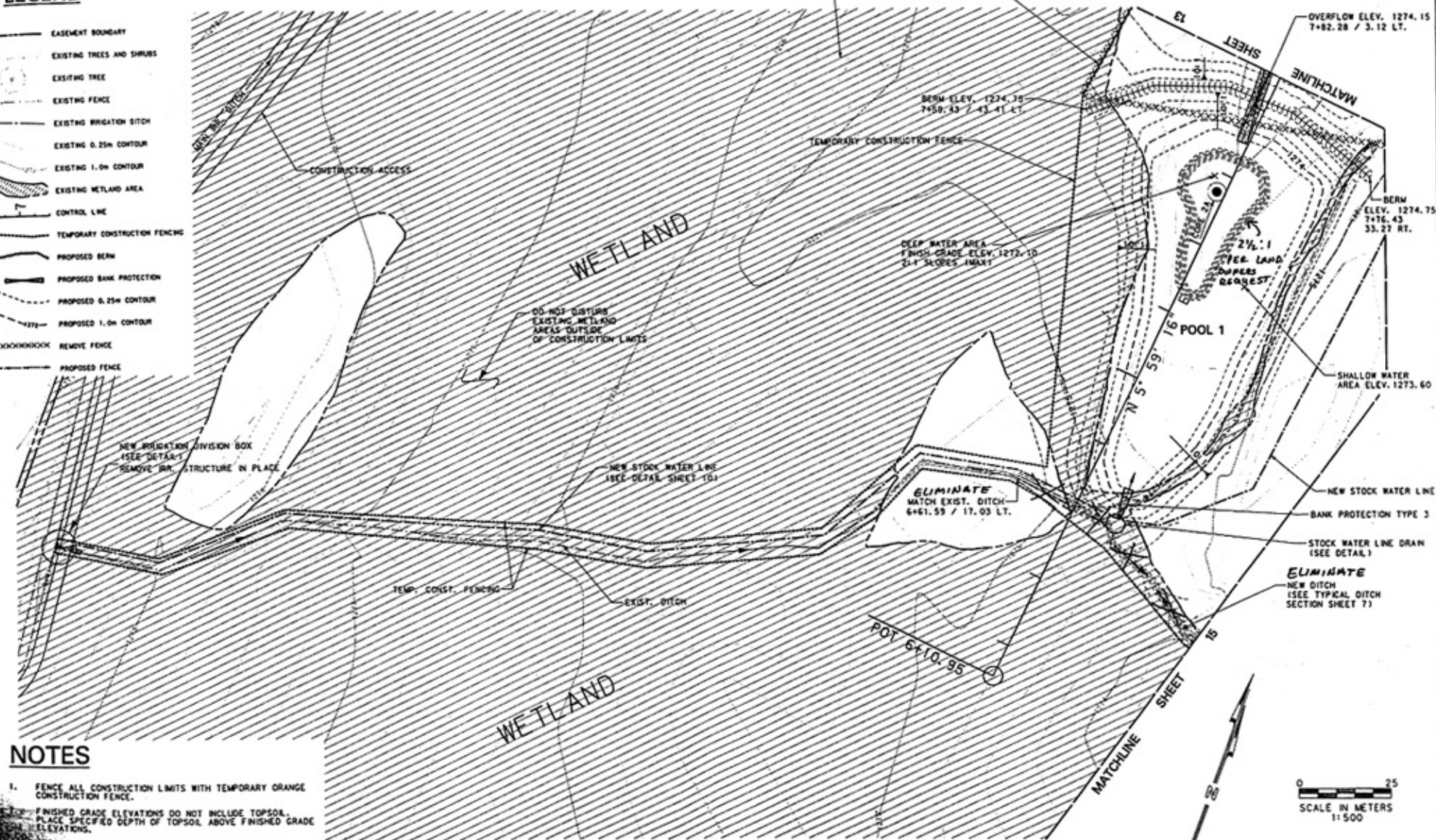
LAND & WATER D-4



SITE PLAN

LEGEND

- EASEMENT BOUNDARY
- EXISTING TREES AND SHRUBS
- EXISTING TREE
- EXISTING FENCE
- EXISTING IRRIGATION DITCH
- EXISTING 0.25M CONTOUR
- EXISTING 1.0M CONTOUR
- EXISTING WETLAND AREA
- CONTROL LINE
- TEMPORARY CONSTRUCTION FENCING
- PROPOSED BERM
- PROPOSED BANK PROTECTION
- PROPOSED 0.25M CONTOUR
- PROPOSED 1.0M CONTOUR
- REMOVE FENCE
- PROPOSED FENCE



NOTES

- FENCE ALL CONSTRUCTION LIMITS WITH TEMPORARY ORANGE CONSTRUCTION FENCE.
- FINISHED GRADE ELEVATIONS DO NOT INCLUDE TOPSOIL. PLACE SPECIFIED DEPTH OF TOPSOIL ABOVE FINISHED GRADE ELEVATIONS.
- STRIP & SALVAGE TOPSOIL PRIOR TO PLACEMENT OF SPILL MATERIAL.
- PLACEMENT OF INTERIOR FENCING SUBJECT TO REVIEW BY LANDOWNER.

GRADING PLAN - POOL 1

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	STPX 20 (19)	12

Andy Cather 6-7-02

Appendix E

BIRD SURVEY PROTOCOL

GPS PROTOCOL

MACROINVERTEBRATE PROTOCOL

MDT Wetland Mitigation Monitoring

Peterson Ranch

Hall, Montana

BIRD SURVEY PROTOCOL

The following is an outline of the MDT Wetland Mitigation Site Monitoring Bird Survey Protocol. Though each site is vastly different, the bird survey data collection methods must be standardized to a certain degree to increase repeatability. An Area Search within a restricted time frame will be used to collect the following data: a bird species list, density, behavior, and habitat-type use. There will be some decisions that team members must make to fit the protocol to their particular site. Each of the following sections and the desired result describes the protocol established to reflect bird species use over time.

Species Use within the Mitigation Wetland: Survey Method

Result: To conduct a bird survey of the wetland mitigation site within a restricted period of time and the budget allotment.

Sites that can be circumambulated or walked throughout.

These types of sites will include ponds, enhanced historic river channels, wet meadows, and any area that can be surveyed from the entirety of its perimeter or walked throughout. If the wetland is not uncomfortably inundated, conduct several “meandering” transects through the site in an orderly fashion (record the number and approximate location/direction of the transects in the field notebook; they do not have to be formalized or staked). If a very small portion of the site cannot be crossed due to inundation, this method will also apply. Though the sizes of the site vary, each site will require surveying to the fullest extent possible within a set time limit. The optimum times to conduct the survey are in the morning hours. Conduct the survey from sunrise to no later than 11:00 AM. (Note: some sites may have to be surveyed in the late afternoon or evening due to time constraints or weather; if this is the case, record the time of day and include this information in your report discussion.) If the survey is completed before 11:00 AM and no additions are being made to the list, then the task is complete. The overall limiting factor regarding the number of hours that are spent conducting this survey is the number of budgeted hours; this determination must be made by site by each individual.

In many cases, binoculars will be the only instrument that is needed to identify and count the birds using the wetland. If the wetland includes deep water habitat that can not be assessed with binoculars, then a scope and tripod are necessary. If this is the case, establish as many lookout posts as necessary from key vantage points to collect the data. Depending on the size of the open water, more time may be spent viewing the mitigation area from these vantage points than is spent walking the peripheries of more shallow-water wetlands.

Sites that cannot be circumambulated.

These types of sites will include large-bodied waters, such as reservoirs, particularly those with deep water habitat (>6 ft) close to the shore and no wetland development in that area of the shoreline. If one area of the reservoir was graded in such a way to create or enhance the development of a wetland, then that will be the area in which the ambulatory bird survey is conducted. The team member must then determine the length of the shoreline that will be surveyed during each visit.

As stated above in the ambulatory site section, these large sites most likely will have to be surveyed from established vantage points.

Species Use within the Mitigation Wetland: Data Recording

Result: A complete list of bird species using the site, an estimate of bird densities and associated behaviors, and identification of habitat use.

1. Bird Species List

Record the bird species on the Bird Survey - Field Data Sheet using the appropriate 4-letter code of the common name. The coding uses the first two letters of the first two words of the birds' common name or if one name, the first four (4) letters. For example, mourning dove is coded MODO and mallard is MALL. If an unknown individual is observed, use the following protocol and define your abbreviation at the bottom of the field data sheet: unknown shorebird: UNSB; unknown brown bird (UNBR); unknown warbler (UNWA); unknown waterfowl (UNWF). For a flyover of a flock of unknown species, use a term that describes the birds' general characteristics and include the approximate flock size in parentheses; do not fill in the habitat column. For example, a flock of black, medium-sized birds could be coded: UNBB / FO (25). You may also note on the data sheet if that particular individual is using a constructed nest box.

2. Bird Density

In the office, sum the Bird Survey – Field Data Sheet data by species and by behavior. Record this data in the Bird Summary Table.

3. Bird Behavior

Bird behavior must be identified by what is known. When a species is simply observed, the behavior that it is immediately exhibiting is what is recorded. Only behaviors that have discreet descriptive terms should be used. The following terms are recommended: breeding pair individual (BP); foraging (F); flyover (FO); loafing (L; e.g. sleeping, roosting, floating with head tucked under wing are loafing behaviors); and, nesting (N). If more behaviors are observed that do have a specific descriptive word, use them and we will add it to the protocol; descriptive words or phrases such as “migrating” or “living on site” are unknown behaviors.

4. Bird Species Habitat Use

We are interested in what bird species are using which particular habitat within the mitigation wetlands. This data is easily collected by simply recording what habitat the species was initially observed. Use the following broad category habitat classifications: aquatic bed (AB - rooted floating, floating-leaved, or submergent vegetation); forested (FO); marsh (MA – cattail, bulrush, emergent vegetation, etc. with surface water); open water (OW – primarily unvegetated); scrub-shrub (SS); and upland buffer (UP); wet meadow (WM – sedges, rushes, grasses with little to no surface water). If other categories are observed onsite that are not suggested here, we will make a new category next year.

AQUATIC INVERTEBRATE SAMPLING PROTOCOL

Equipment List

- D-frame sampling net with 1 mm mesh. Wildco is a good source of these.
- Spare net.
- 1-liter plastic sample jars, wide-mouth. VWR has these: catalog #36319-707.
- 95% ethanol: Northwest Scientific in Billings carries this.

All these other things are generally available at hardware or sporting goods stores. Make the labels on an ink jet printer preferably.

- hip waders.
- pre-printed sample labels (printed on Rite-in-the-Rain or other coated paper, two labels per sample).
- pencil.
- plastic pail (3 or 5 gallon).
- large tea strainer or framed screen.
- towel.
- tape for affixing label to jar.
- cooler with ice for sample storage.

Site Selection

Select the sampling site with these considerations in mind:

- Select a site accessible with hip waders. If substrates are too soft, lay a wide board down to walk on.
- Determine a location that is representative of the overall condition of the wetland.

Sampling

Wetland invertebrates inhabit the substrate, the water column, the stems and leaves of aquatic vegetation, and the water surface. Your goal is to sweep the collecting net through each of these habitat types, and then to combine the resulting samples into the 1-liter sample jar.

Dip out about a gallon of water into the pail. Pour about a cup of ethanol into the sample jar. Fill out the top half of the sample labels, using pencil, since ink will dissolve in the ethanol.

Ideally, you can sample a swath of water column from near-shore outward to a depth of approximately 3 feet with a long sweep of the net, keeping the net at about half the depth of the water throughout the sweep. Sweep the water surface as well. Pull the net through a vegetated area, beneath the water surface, for at least a meter of distance.

Sample the substrate by pulling the net along the bottom, bumping it against the substrate several times as you pull.

This step is optional, but it gives you a chance to see that you've collected some invertebrates. Rinse the net out into the bucket, and look for insects, crustaceans, etc. If necessary, repeat the sampling process in a nearby location, and add the net contents to the bucket. Remember to sample all four environments.

Sieve the contents of the bucket through the straining device and pour or carefully scrape the contents of the strainer into the sample jar.

If you skip the bucket-and-sieve steps, simply lift handfuls of material out of the sampling net into the jars. In either case, please include some muck or mud and some vegetation in the jar. Often, you will have collected a large amount of vegetable material. If this is the case, lift out handfuls of material from the sieve into the jar, until the jar is about half full. Please limit material you include in the sample, so that there is only a single jar for each sample.

Top off the sample jar with enough ethanol to cover all the material in the jar. Leave as little headroom as possible.

It is not necessary to sample habitats in any specified order. Keep in mind that disturbing the habitats prior to sampling will chase off the animals you are trying to capture.

Complete the sample labels. Place one label inside the sample jar and tape the other label securely to the outside of the jar. Dry the jar before attaching the outer label if necessary. In some situations, it may be necessary to collect more than one sample at a site. If you take multiple samples from the same site, clearly indicate this by using individual sample numbers, along with the total number of samples collected at the site (e.g. Sample #3 of 5 total samples).

Photograph the sampled site.

Sample Handling/Shipping

- In the field, keep collected samples cool by storing them in a cooler. Only a small amount of ice is necessary.
- Inventory all samples, preparing a list of all sites and enumerating all samples, before shipping or delivering to the laboratory.
- Deliver samples to Rhithron.

GPS Mapping and Aerial Photo Referencing Procedure

The wetland boundaries, photograph location points and sampling locations were field located with mapping grade Trimble Geo III GPS units. The data was collected with a minimum of three positions per feature using Course/Acquisition code. The collected data was then transferred to a PC and differentially corrected to the nearest operating Community Base Station. The corrected data was then exported to ACAD drawings in Montana State Plain Coordinates NAD 83 international feet.

The GPS positions collected and processed had a 68% accuracy of 7 feet except in isolated areas of Tasks .008 and .011, where it went to 12 feet. This is within the 1 to 5 meter range listed as the expected accuracy of the mapping grade Trimble GPS.

Aerial reference points were used to position the aerial photographs. This positioning did not remove the distortion inherent in all photos; this imagery is to be used as a visual aide only. The located wetland boundaries were given a final review by the wetland biologist and adjustments were made if necessary.

Any relationship of features located to easement or property lines are not to be construed from these figures. These relationships can only be determined with a survey by a licensed surveyor.

Appendix F

REVEGETATION

MDT Wetland Mitigation Monitoring
Peterson Ranch
Hall, Montana

Shoshone creeping wildrye	4.5 (4.0)
Western manna grass	1.0 (1.0)
American sloughgrass	1.0 (1.0)
Blatic rush	0.1 (0.1)
Bluejoint reedgrass	0.1 (0.1)

25. PLANTING

A. Description

This work includes collecting, preparing, and planting live cuttings from suitable willow species resident within the Flint Creek floodplain.

B. Construction Requirements

1. Schedule

Collect and plant cuttings when the ground is ice-free and while the whole plants are dormant. This will typically be in late fall after leaf-drop (October-November), or early spring before bud-break (March-May).

2. Quality Assurance

Supplier or installation contractor is to have not less than three years of experience in successfully collecting and installing wetland plant material.

3. Selection

Select cuttings from the list of suitable species provided below. Identification of willow species is to be made by a qualified agronomist or biologist supervising the project. Select young, green wood (1-3 years). Do not use suckers (<1 year). Choose branches that are 13-25 millimeters (0.5-1.0 inches) in diameter and 900-1800 millimeters (3-6 feet) in length. Select branches that will not overly affect the health and appearance of the parent plant when removed. Do not remove more than 25% of the branches from any given individual.

4. Preparation

Trim all side branches of the cutting to a single stem. Cut the tip where the cutting becomes less than 13 millimeters (0.5 inches). Cut the bottom of the cutting at a 45 degree angle to assist in planting and identification of the bottom end. Label each cutting with color-coded flagging or paint to identify species. Soak cuttings in water for at least 24 hours prior to planting.

5. Storage

Cuttings may be stored up to two weeks wrapped in burlap and bailing twine and soaked in water. Store vertically and soak the lower 450-600 millimeters (18-24 inches) of the stems. Do not submerge the entire cutting. If it is necessary to store cuttings for longer periods, store vertically in a dry, well ventilated, dark, and cool (35-50 deg. F) without freezing. Keep cuttings in moist (not soaked), fungus-free sawdust. At no time should the cuttings be spread out on the ground or exposed to sun and/or wind.

6. Planting

Plant cuttings in small colonies of 8-10 plants each in the locations shown on the plans. Space colonies at 8-10 meters (26-33 feet) apart. Space individual cuttings at 300-900 millimeters (1-3 feet) apart.

24. SEEDING



A. Description

This work consists of revegetating areas shown on the plans and other areas disturbed during construction. Seeding Area No. 1 is a native seed mix to be used in all non-wetland (dry) areas. Seeding Area No. 2 is a transitional seed mix to be used in wet and semi-wet areas. All work is to be conducted in accordance with Section 610 of the Standard Specifications.

B. Construction Requirements

1. Schedule. Drill seed only between October 1 and May 15. Broadcast seeding is acceptable between April 1 and May 15. Double seeding rate for broadcast seeding.

C. Materials

1. Seeding Area No. 1

<u>Species</u>	<u>Kgs(lbs) per Hectare (Acre)</u>
Revenue slender wheatgrass	1.0 (1.0)
Rosana western wheatgrass	6.5 (6.0)
Lodorm green needlegrass	3.5 (3.0)
Sherman big bluegrass	2.0 (2.0)
Magnar Great Basin wildrye	4.5 (4.0)

2. Seeding Area No. 2

<u>Species</u>	<u>Kgs(lbs) per Hectare (Acre)</u>
Revenue slender wheatgrass	1.0 (1.0)
Rosana western wheatgrass	7.5 (7.0)

January 1999

SPECIAL PROVISIONS

Project No. 1280

Insert cuttings in the ground so that the bottom is between 50 and 150 millimeters (2-6 inches) below the water table throughout the growing season. Insert cuttings by hand or with a rubber mallet where possible. If the soil is rocky or gravelly, use a rod or rebar stake to create a hole. The use of a shovel or other large tools should be avoided. If shoveling is necessary, the soil should be well tamped to insure good contact between the cutting and the soil.

Cleanly clip the top of the cutting so that at least 3/4 of the length of the stem is below ground, and 3-4 healthy buds are above ground. A minimum of 200 millimeters (8 inches) should remain above ground. Clip any portion of the top end that is deformed by installation with a rubber mallet.

C. Materials

The following species are suitable for cuttings and can be found within the project site. Obtain cuttings on-site or from other off-site locations within the Flint Creek floodplain. Obtain permission from landowners prior to collecting cuttings on private property.

Suitable Cutting Species

Peach-Leaved Willow	<i>Salix amygdaloides</i>
Sandbar Willow	<i>Salix exigua</i>
Bebb's Willow	<i>Salix bebbiana</i>
Drummond Willow	<i>Salix drummondiana</i>
Yellow Willow	<i>Salix lutea</i>

Other willow species native to the Flint Creek floodplain may be substituted upon approval.

D. Method of Measurement

Willow cuttings will be measured as each, including collection, storage, planting, and installation in place.

E. Basis of Payment

Payment for the completed and accepted quantities will be made under the following:

<u>Pay Item</u>	<u>Pay Unit</u>
Bareroot Stock	Each
Willow Cuttings	Each

Such price and payment constitutes full compensation for all labor, equipment, tools, materials and incidentals necessary to complete the item.