MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2010

Peterson Ranch
Hall, Granite County, Montana

Prepared for:

MONTANA MDT DEPARTMENT OF TRANSPORTATION

2701 Prospect Ave
Helena, MT 59620-1001

December 2010

Prepared by:

CONFLUENCE

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and

MORRISON MAIERLE, INC.
An Employee-Owned Company

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CCI Project No: MDT.004

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1. INTRODUCTION

The Peterson Ranch Wetland Mitigation 2010 Monitoring Report documents the eighth year of monitoring at the Peterson Ranch Wetland Mitigation Site. The site was developed to mitigate for wetland impacts associated with the Montana Department of Transportation (MDT) reconstruction of Highway 1 between Maxville and Drummond and to provide a potential reserve for future highway projects in Watershed #2, the Upper Clark Fork (PBS&J 2008).

The Peterson Ranch is located in Watershed #2, southeast of Hall, in Granite County, Montana (Figure 1). The site is situated at an elevation of approximately 4,200 feet above mean sea level. Figures 2 and 3 show the monitoring site locations and mapped site features, respectively. The MDT Wetland Mitigation Site Monitoring Form, US Army Corps of Engineers (USACE) Wetland Determination Data Forms (Environmental Laboratory 1987), and MDT Montana Wetland Assessment Forms (Berglund and McEldowney 2008) are included in Appendix B. Representative photographs of the site are shown in Appendix C and the project plan sheet is included in Appendix D.

The project boundary begins south of Montana Highway 512. The west and east boundaries are fenced to prevent livestock grazing. The east fence line defines the boundary between the ranch and an active timber mill. An electric fence parallels the south boundary of the mitigation site near the south end of depression #1. The fences form a perimeter around the created and enhanced wetlands (PBS&J 2008).

Seasonal flooding of Flint Creek, shallow groundwater influenced by the Flint Creek Canal, and irrigation are the primary sources of hydrology for the mitigation wetlands. Local groundwater systems are influenced by Flint Creek and groundwater flow though the highly permeable alluvium located within the floodplain of the Flint Creek Valley (PBS&J 2008).

The site was designed to compensate for functional losses to riparian, wet meadow, emergent wetland, and open water areas associated with MDT road construction. The mitigation project was developed to replace wetland functions that included sediment and nutrient retention, water quality, groundwater recharge, and waterfowl and wildlife habitat. Project goals for the Peterson Ranch wetland mitigation site include the following (PBS&J 2008):

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

Construction and revegetation implementation were completed in spring 2002. The primary components of construction included 1) conversion of

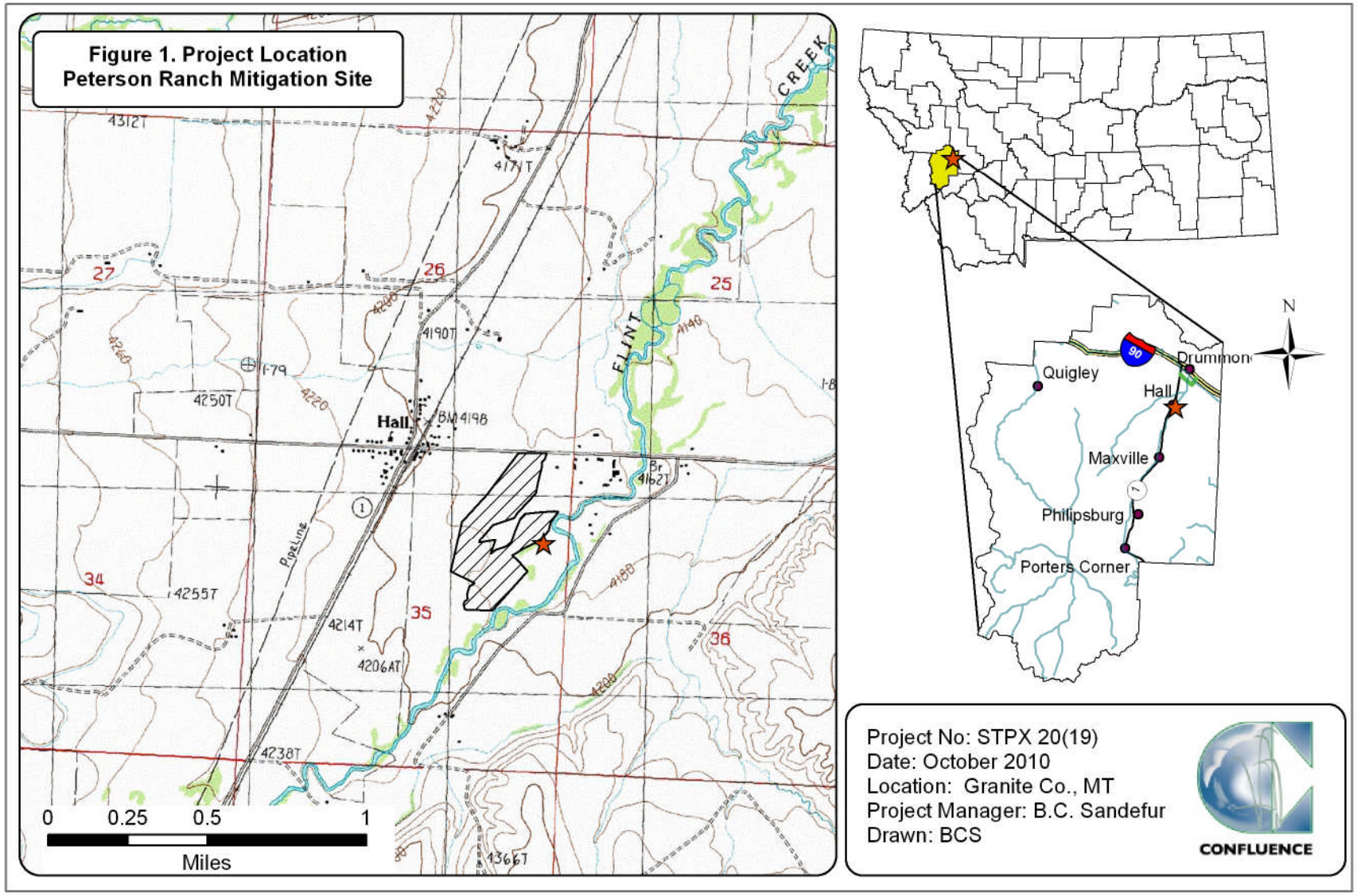

Figure 1. Project location Peterson Ranch Mitigation Site.

uplands to create 8.2 acres of wetlands comprised of four shallow water pools and adjacent emergent wetlands; and 2)restoration of a degraded wet meadow to create 9.4 acres of shallow open water and emergent and scrub-shrub wetlands.

2. METHODS

The site was monitored on August 11, 2010. Information contained on the Mitigation Monitoring Form and Wetland Data Form was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix B). Monitoring activity locations were mapped using a global positioning system (GPS) as illustrated on Figure 2 (Appendix A). Information collected included wetland delineation, wetland and open water boundary mapping, vegetation community mapping, vegetation transect monitoring, woody species survival monitoring, soil data, hydrology data, bird and wildlife use documentation, photographs, functional assessment, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

Technical criteria for wetland hydrology guidelines have been established as "permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (usually 14 days or more or 12.5 percent) during the growing season" (Environmental Laboratory 1987). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing season are considered wetlands. The growing season is defined for purposes of this report as the number of days where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit (Environmental Laboratory 1987).

Hydrological indicators as outlined on the Wetland Data Form were documented at four data points established within the project area. Hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on electronic field data sheets (Appendix B). Hydrologic assessments allow evaluation of mitigation goals addressing inundation and saturation requirements.

Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data was recorded electronically on the Wetland Data Form (Appendix B).

2.2. Vegetation

The boundaries of general dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on aerial photographs. The percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (less than 1 %); 1 (1 to 5 %); 2 (6 to 10 %); 3 (11 to 20 %); 4 (21 to 50 %); and 5 (more than 50 %) (Appendix B).

Temporal changes in vegetation were evaluated through annual assessments of static belt transects (Figure 2, Appendix A). Vegetation composition was assessed and recorded on two vegetation belt transects, Transect 1 and Transect 2, approximately 10 feet wide and 200 and 195 feet long, respectively. (Figure 2, Appendix A). The transect locations were recorded with a GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent cover of each vegetation species within the "belt" was estimated using the same values and cover ranges listed in the above paragraph (Monitoring Form, Appendix B). Photographs were taken at the endpoints of the transects during the monitoring event (Appendix C).

The location of noxious weeds was noted in the field during the investigation and mapped on the aerial photo (Figure 3.0, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "+", "▲", or "■" representing 0 to 0.1 acres, 0.1 to 1.0 acres, or greater than 1.0 acre in extent, respectively. Cover classes are represented by a T, L, M, or H, for less than 1 percent, 1 to 5 percent, 2 to 25 percent, and 25 to 100 percent, respectively.

Several containerized woody species and willow cuttings were planted at the mitigation site in 2003. Survival of individual plants was assessed annually by species since 2004. Survival data are presented in the Monitoring Forms (Appendix B).

2.3. Soil

Soil information was obtained from the Soil Survey for Granite County (USDA 2010) and in situ soil descriptions. Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the USACE 1987 Wetland Delineation Manual. A description of the soil profile, including hydric indicators when present, was recorded on the USACE wetland determination form for each profile (Appendix B).

2.4. Wetland Delineation

Waters of the U.S. including special aquatic sites and wetlands were delineated throughout the project area in accordance with criteria established in the 1987 USACE *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987). In order to delineate a representative area as wetland, the technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology, as described in the 1987 Wetland Manual, must be satisfied. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). A Routine Level-2) On-site Determination Method (Environmental Laboratory 1987) was used to delineate wetland areas within the project boundaries. The information was recorded electronically on the Wetland Data Form (Appendix B).

Consultation with the USACE determined that the 1987 manual should continue to be used at this site where baseline wetland conditions had been established prior to 2008. The use of the 2010 *Interim Regional Supplement to the Corps of*

Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010) was not required.

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

2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the wetland monitoring form during the site visit. Indirect use indicators, including tracks, scat, burrow, eggshells, skins, and bones, were also recorded (Appendix B). Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive wildlife species list for the entire site was compiled.

2.6. Functional Assessment

The MDT Montana Wetland Assessment Method (MWAM) was used to provide a rapid assessment of the functions and values within the mitigation area. This method provides an objective means of assigning wetlands an overall rating and of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society, and relate to ecological significance without regard to subjective human values (Berglund 1999). A recent revision (2008) of this method refines (ratings for some wetland functions, land management and fish and wildlife habitat.

The 1999 MDT MWAM (Berglund 1999) was used to assess wetland functions at this site from 2001 to 2007. Wetland functions in 2008 and 2010 were assessed using the 2008 MDT assessment method (Berglund & McEldowney 2008). Field data for this assessment were collected during the site visit. A Wetland Assessment Form was completed for each wetland or group of wetlands (Assessment Areas [AA]; Appendix B).

2.7. Photo Documentation

Monitoring at photo points provides supplemental information documenting wetland condition, trends, current land use surrounding the site, the upland buffer, the monitored area, and the vegetation transects. Photographs were taken at established photo points throughout the mitigation site and at the endpoints of the transects during the site visit (Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 2, Appendix A).

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS (Global Positioning System) unit during the 2010 monitoring season. Points were collected using WAAS-enabled differential corrected satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, subsequently exported into GIS, and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph and then digitized. Site features and survey points that were mapped included fence boundaries, photograph points, transect beginnings and endings, wetland boundaries, and vegetation community boundaries.

2.9. Maintenance Needs

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

3. RESULTS

3.1. Hydrology

The monthly climate summary for the period of record from the Drummond Aviation Meteorological Station (242500) recorded an average total annual precipitation rate of 12.75 inches from June 1963 to July 2010 (WRCC 2010). The annual precipitation total for 2009 was 10.56, which is below average. The monthly precipitation total from January to September was 8.78 inches in 2009 and 8.84 inches in 2010, both below the average of 10.35 inches recorded for the same time frame over the period of record.

The length of the growing season recorded for the Blossberg and Nythar soil series, the dominant map units in the region, is 70 to 110 days. The mitigation site would require a minimum of nine days of inundation and/or saturation within 12 inches of the ground surface to meet the hydrology criteria.

The primary surface water source is the Flint Creek Canal and flood irrigation. Approximately 25 percent of the mitigation site was inundated during the investigation. Overall water depths ranged from 0 to 4 feet with an average water depth of 1 foot. The water depth at the emergent vegetation and open water boundary was approximately 1 foot. Areas identified as wetland that were not inundated were saturated within 12 inches of the ground surface (see below). Water levels were lower in 2010 in wetland cells 1 and 2 than in 2008 as shown in the side-by-side photographs of years 2008 and 2010 included in Appendix C.

Four data points, T-1/SP-1, T-1/SP-2, T-2/SP-1, and T-2/SP-2 were assessed to determine the upland and wetland boundaries (Wetland Data Forms, Appendix B). Data points T-1/SP-2 and T-2/SP-2 exhibited saturation at 12 inches below the ground surface and at the ground surface, respectively, which met the hydric soil criteria. Data point T-1/SP-2 had a secondary indicator of a positive FAC-

neutral test. Data points T-1/SP-1 and T-2/SP-1 had no indicators of wetland hydrology and were considered upland areas.

3.2. Vegetation

The 83 vegetation species identified from 2002 to 2010 are listed in Table 1. Two upland and ten wetland vegetation communities were identified in 2010 (Figure 3, Appendix A; Monitoring Form, Appendix B). The 2010 community types were Type 1 – *Agrostis alba*, Type 2 – *Agropyron trachycaulum/Agrostis alba* Upland, Type 3 – *Salix* spp./*Crataegus douglasii* Wetland, Type 4 – *Eleocharis palustris*/*Typha latifolia* Wetland, Type 5 – *Carex nebrascensis*/*Typha latifolia* Wetland, Type 6 – *Agrostis alba*/*Juncus balticus* Wetland, Type 7 – *Carex utriculata/Alopecurus pratensis* Wetland, Type 8 – *Phleum pratense/Agrostis alba* Wetland, Type 10 – *Agrostis alba*/*Veronica americana* Wetland, Type 11 – *Chara* spp./*Veronica americana* Wetland, Type 12 – *Agropyron trachycaulum/Lepidium perfoliatum* Upland. The open water areas are identified as "OW" on Figure 3 (Appendix A).

Community Type 1 – *Agrostis alba* was identified in emergent wetlands located primarily at the south boundary. Redtop (*Agrostis alba*), slender wheatgrass (*Agropyron trachycaulum*), Nebraska sedge (*Carex nebrascensis*) and meadow fescue (*Festuca pratensis*) dominated the cover.

Upland Type 2 – *Agropyron trachycaulum/Agrostis alba* was found in the dry slopes surrounding the constructed cells and a large area in the north half of the site. The vegetation species were dominated by slender wheatgrass, redtop, and less than five percent cover of upland grasses and invasive plants.

Type 3 – *Salix* spp./*Crataegus douglasii* characterized the scrub-shrub wetland that has formed on the banks of an existing side channel/irrigation ditch. Douglas hawthorn (*Crataegus douglasii*), Bebb willow (*Salix bebbiana*), sandbar willow (*Salix exigua*), Geyer willow (*Salix geyerana*), and beaked sedge (*Carex utriculata*) dominated the cover.

Community Type 4 – *Eleocharis palustris*/*Typha latifolia* was identified in the emergent wetland that encompasses open water cells 4 and 5. The dominant species were creeping spikerush (*Eleocharis palustris),* broad-leaf cattail (*Typha latifolia),* redtop, and meadow foxtail (*Alopecurus pratensis*).

Table 1. Vegetation species observed from 2002 through 2010 at the Peterson Ranch Mitigation Site.

SCIENTIFIC NAME	COMMON NAME	REGION 9 INDICATOR STATUS[1]
Achillea millefolium	yarrow,common	FACU
Agropyron repens	quackgrass	FACU
Agropyron smithii	wheatgrass,Western	FACU
Agropyron trachycaulum	wheatgrass,slender	FAC
Agrostis alba	redtop	FACW
Alopecurus pratensis	foxtail,meadow	FACW
Amaranthus retroflexus	amaranth,red-root	FACU+
Beckmannia syzigachne	sloughgrass,American	OBL
Betula occidentalis	birch,spring	FACW
Bidens cernua	beggar-ticks,nodding	FACW+
Bromus inermis	smooth brome	NL
Bromus tectorum	cheatgrass	NL
Carduus nutans	musk thistle	NL
Carex aquatilis	**sedge,water**	OBL
Carex microptera	sedge,small-wing	FAC
Carex nebrascensis	sedge,Nebraska	OBL
Carex rostrata (utriculata)*	beaked sedge	OBL
Centaurea maculosa	spotted knapweed	NL
Chara spp.		NL
Chenopodium album	goosefoot,white	FAC
Chrysanthemum leucanthemum	oxeye daisy	NL
Cirsium arvense	thistle,creeping	FACU+
Cornus stolonifera	dogwood,red-osier	FACW
Crataegus douglasii	hawthorn,Douglas'	FAC
Cynoglossum officinale	gypsy-flower	NL
Dactylis glomerata	grass,orchard	FACU
Descurainia sophia	common tansymustard	NL
Elaeagnus commutata	silver-berry,American	NI
Eleocharis palustris	spikerush,creeping	OBL
Elymus cinereus	wild-rye,basin	NI
Epilobium ciliatum	willow-herb,hairy	FACW-
Equisetum arvense	horsetail,field	FAC
Festuca pratensis	fescue,meadow	FACU+
Geum macrophyllum	**avens,large-leaf**	FACW+
Glyceria striata	grass,fowl manna	OBL
Helianthus annuus	sunflower,common	FACU+
Hordeum jubatum	barley,fox-tail	FAC+
Iris missouriensis	iris,Rocky Mountain	FACW+
Juncus balticus	rush,Baltic	OBL
Juncus confusus	rush,Colorado	FAC
Juncus ensifolius	rush,three-stamen	FACW

[1]Region 9 Northwest (Reed 1998).
New species identified in 2010 are in **bold** type.

Table 1. (Continued). Vegetation species observed from 2002 through 2010 at the Peterson Ranch Mitigation Site.

SCIENTIFIC NAME	COMMOM NAME	REGION 9 INDICATOR STATUS[1]
Juncus mertensianus	rush,Merten's	OBL
Juncus nodosus	rush,knotted	OBL
Kochia scoparia	summer-cypress,Mexican	FAC
Lepidium perfoliatum	pepper-grass,clasping	FACU+
Lomatium spp.		NL
Lychnis alba	bladder campion	NL
Malva neglecta	common mallow	NL
Medicago sativa	alfalfa	NL
Mentha arvensis	mint,field	FAC
Phalaris arundinacea	grass,reed canary	FACW
Phleum pratense	timothy	FACU
Plantago major	plantain,common	FAC+
Poa ampla	bluegrass,big	FACU
Poa palustris	**bluegrass,fowl**	FAC
Poa pratensis	**bluegrass,Kentucky**	FACU+
Polygonum amphibium	smartweed,water	OBL
Polygonum aviculare	knotweed,prostrate	FACW-
Populus tremula (tremuloides)*	quaking aspen	FAC+
Populus balsamifera (trichocarpa)*	black cottonwood	FAC
Potentilla anserina	silverweed	OBL
Potentilla gracilis	cinquefoil,Northwest	FAC
Prunus virginiana	cherry,choke	FACU
Ribes americanum	**currant,wild black**	FAC
Ribes aureum	currant,golden	FAC+
Rosa woodsii	rose,Woods	FACU
Rumex crispus	dock,curly	FACW
Salix bebbiana	willow,bebb	FACW
Salix exigua	willow,sandbar	OBL
Salix geyerana	willow,geyer	FACW+
Salix spp.		NL
Scirpus acutus	bulrush,hard-stem	OBL
Sisymbrium altissimum	mustard,tall tumble	FACU-
Sisyrinchium spp.		NL
Solidago rigida	golden-rod,stiff	FACU
Taraxacum officinale	dandelion,common	FACU
Thlaspi arvense	penny-cress,field	NI
Tragopogon dubius	yellow salsify	NL
Trifolium pratense	clover,red	FACU
Triglochin maritimum	arrow-grass,seaside	OBL
Typha latifolia	cattail,broad-leaf	OBL
Veronica americana	speedwell,american	OBL

[1]Region 9 Northwest (Reed 1988).
New species identified in 2010 are in **bold** type.

Type 5 – *Carex nebrascensis*/*Typha latifolia* characterized the depression wetlands located in the northwest portion of the site. Nebraska sedge, broad-leaf cattail, and meadow foxtail dominated the cover.

Wetland community Type 6 – *Agrostis alba*/*Juncus balticus* was identified in wet meadows located between drier upland slopes and wetlands. The cover was dominated by redtop, Baltic rush (*Juncus balticus*), and common timothy (*Phleum pratense*).

Wetland Type 7 – *Carex utriculata/Alopecurus pratensis* characterized the vegetation adjacent to the irrigation ditch corridor. There was no woody overstory. The water level in the ditch was low. Beaked sedge and meadow foxtail dominated the cover.

Community Type 8 – *Phelum pratense/Agrostis alba* was identified in an emergent wetland that provided intermittent drainage into cell 1. The wetland areas were inundated with water from the irrigation ditch. The willow cuttings in the community were heavily browsed. Common timothy, redtop, creeping spikerush, Nebraska sedge, and broad-leaf cattail dominated the species.

Wetland Type 10 – *Agrostis alba*/*Veronica americana* formed at the margins of the open water in cell 2. The species were dominated by redtop, meadow foxtail, creeping spikerush, and American speedwell (*Veronica americana*).

Type 11 – *Chara* spp./*Veronica americana* was identified at the shallow water margins of the open water cells. The area adjacent to the open water was predominantly bare ground. Muskgrass (Chara spp.), American speedwell, and broad-leaf cattail were the primary species.

Upland Type 12 – *Agropyron trachycaulum/Lepidium perfoliatum* was located on the dry berms in the west side of the mitigation site. The area contained several invasive plant species including creeping (Canada) thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), and clasping peppergrass (*Lepidium perfoliatum*).

Water levels were lower in cells 1 and 2 in 2010 than in 2008 as shown on the side-by-side photos taken in 2008 and 2010 in Appendix C. The perimeters of the cells were predominantly unvegetated although there was evidence of saturation. The site was monitored later in the year than in 2008 and precipitation totals were less than average in 2009 and 2010. The site was subjected to moderate to intensive grazing during the growing season.

The locations of Transect 1 and 2 are shown on Figure 2 (Appendix A). The interval data is included on the Monitoring Form in Appendix B and photographs of the transect endpoints are included in Appendix C.

The data collected on Transect 1 is summarized in Table 2 and graphed in Charts 1 and 2. The transect length measured in 2010 was 200 feet versus the 222 feet measured in previous years. This may likely be attributed to the stakes having been moved by cattle grazing in this area. The same community types, upland Type 2 and wetland Type 4, have been identified on the transect intervals from 2002 to 2010. Hydrophytic species dominated 36.5 percent of the transect.

Table 2. Data summary for Transect 1 at the Peterson Ranch Wetland Mitigation Site.

Monitoring Year	2002	2003	2004	2005	2006	2007	2008	2010
Transect Length (feet)	222	222	222	222	222	222	222	200
Vegetation Community Transitions along Transect	1	1	1	1	1	1	1	1
Vegetation Communities along Transect	2	2	2	2	2	2	2	2
Hydrophytic Vegetation Communities along Transect	1	1	1	1	1	1	1	1
Total Vegetative Species	14	15	15	17	17	18	18	20
Total Hydrophytic Species	9	11	10	11	11	13	15	14
Total Upland Species	4	3	3	6	6	5	6	6
Estimated % Total Vegetative Cover	85	95	68	60	60	95	90	90
% Transect Length Comprising Hydrophytic Vegetation Communities	49	38	38	38	38	38	38	36.5
% Transect Length Comprising Upland Vegetation Communities	51	62	62	62	62	62	62	63.5
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	0	0	0	0
% Transect Length Comprising Bare Substrate	0	0	0	0	0	0	0	0

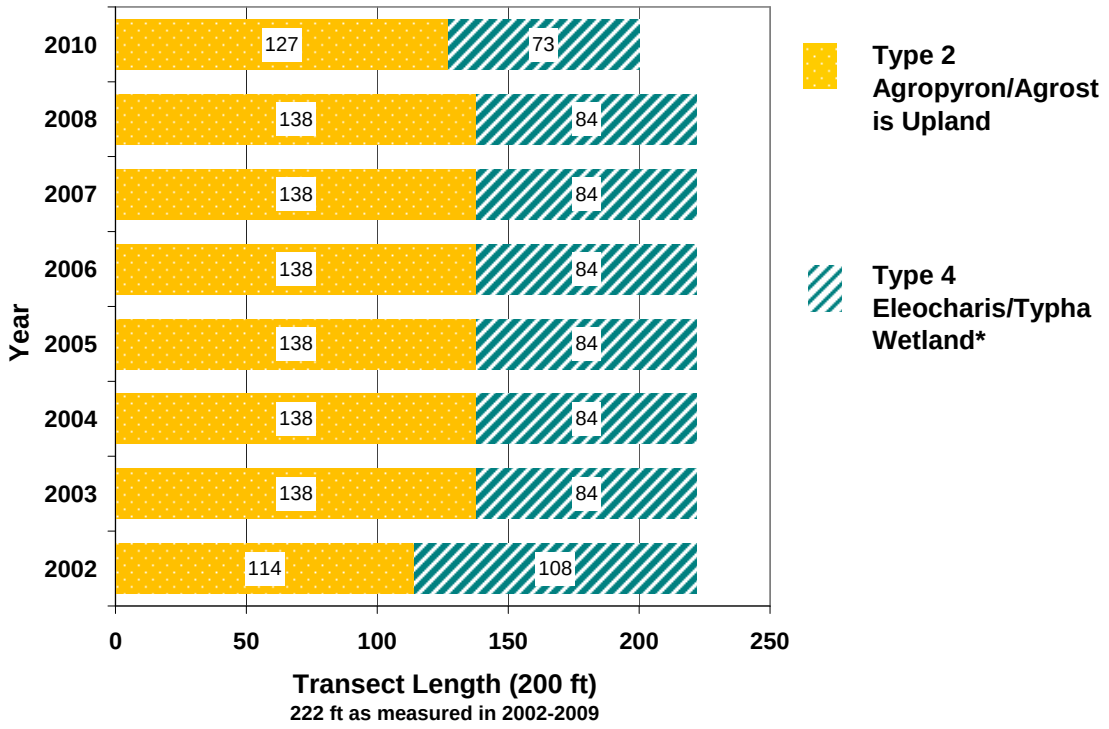

Chart 1. Transect map showing vegetation community types on Transect 1 from start (0 feet) to end (222 feet in 2002 to 2008, 200 feet in 2010).

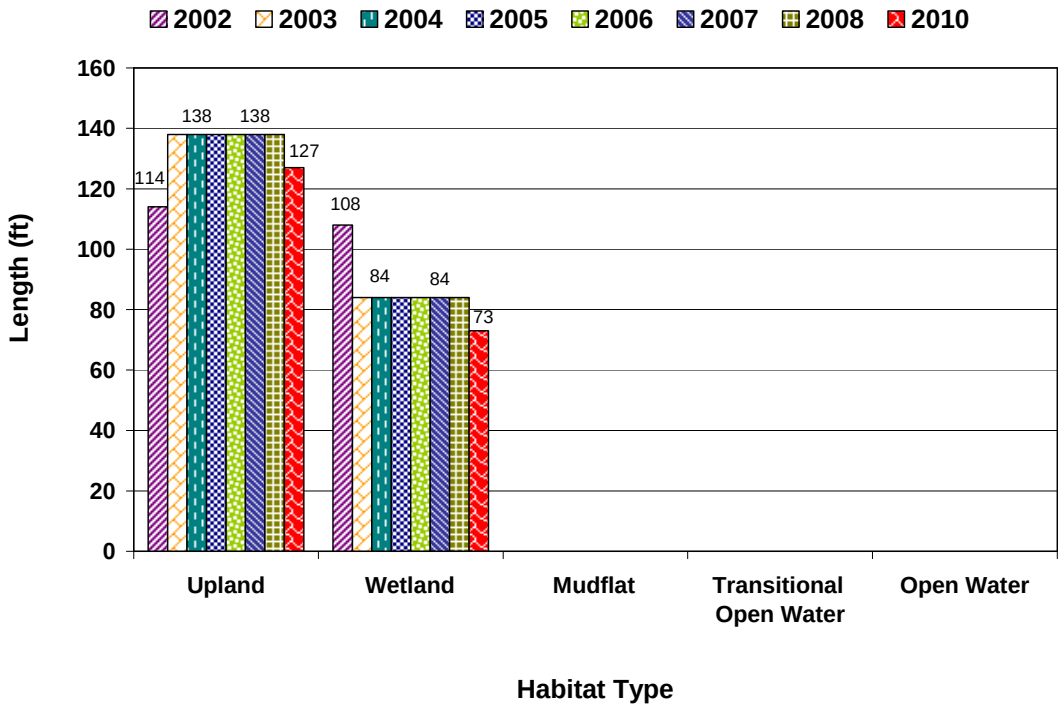

Chart 2. Length of vegetation habitats within Transect 1 from 2002 to 2010.

The data for Transect 2 is summarized in Table 3 and graphed on Charts 3 and 4. Upland Type 2 *Agropyron*/*Agrostis* was replaced in 2010 with wetland Type 11 *Chara* spp./*Veronica*. A majority of the interval contained bare ground with isolated patches of decadent muskgrass. *Chara* spp. and other unidentified algal mats covered some of the soil surface through the Type 11 vegetation community and indicates that this area was inundated during the early growing season. Aerial photography dated July 15, 2010 (Appendix B) provides direct evidence that this area was inundated and functions as a seasonal pothole. The interval ended in open water. The area was heavily grazed during this growing season. The wetland species cover, density, and diversity along the transect through this community was marginal. Nonetheless, this community satisfied the three wetland criteria and was delineated as wetland.

Table 3. Data summary for Transect 2 at the Peterson Ranch Wetland Mitigation Site.

Monitoring Year	2002	2003	2004	2005	2006	2007	2008	2010
Transect Length (feet)	**195**	**195**	**195**	**195**	**195**	**195**	**195**	**195**
Vegetation Community Transitions along Transect	0	1	1	1	1	1	1	1
Vegetation Communities along Transect	1	2	2	2	2	2	2	2
Hydrophytic Vegetation Communities along Transect	0	1	1	1	1	1	1	1
Total Vegetative Species	15	13	13	9	14	16	14	7
Total Hydrophytic Species	6	6	7	3	6	7	5	2
Total Upland Species	6	7	5	6	8	9	9	5
Estimated % Total Vegetative Cover	85	95	85	50	50	50	53	50
% Transect Length Comprising Hydrophytic Vegetation Communities	0	10	10	10	5	5	5	93.9
% Transect Length Comprising Upland Vegetation Communities	100	90	90	90	95	95	95	6.1
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	0	0	0	0
% Transect Length Comprising Bare Substrate	0	0	0	0	0	0	0	0

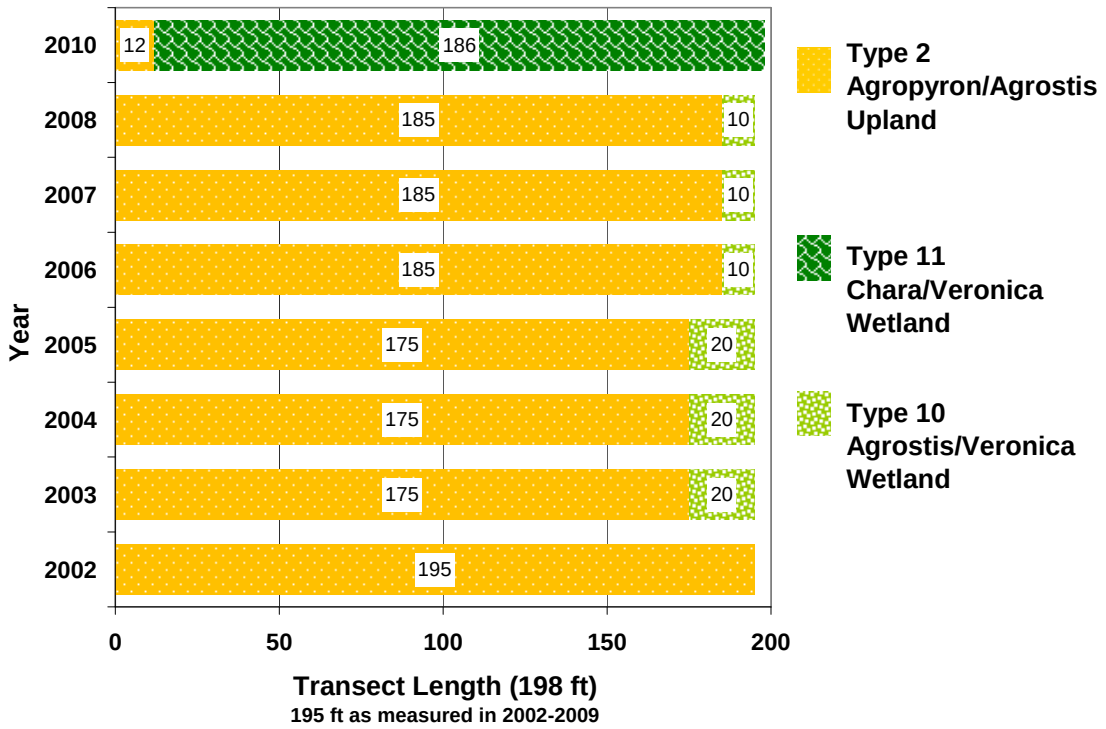

Chart 3. Transect map showing vegetation community types on Transect 2 from start (0 feet) to end (195 feet in 2002 to 2008, 198 feet in 2010).

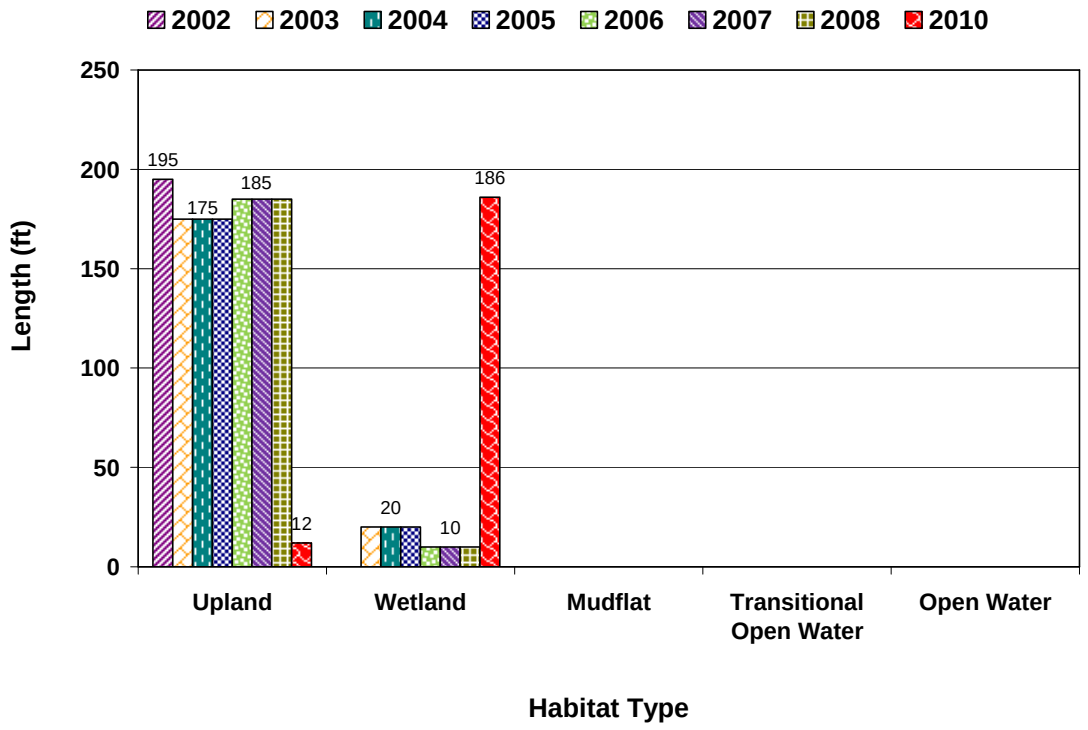

Chart 4. Length of vegetation habitats within Transect 1 from 2002 to 2010.

Infestations of Priority 2B noxious weeds including houndstongue (*Cynoglossum officinale)*, spotted knapweed (*Centaurea maculosa*), and Canada thistle (*Cirsium arvense*), were mapped on Figure 3 (Appendix A). Spotted knapweed was identified in the north half of the site in areas less than 0.1 acre and between 0.1 and 1.0 acre in size and at low to moderate cover. Canada thistle was located near cells 3 and 4 at less than 0.1 acre and low to moderate cover.

The only woody species observed in 2010 were willows. The plantings in cells 1 and 2 showed evidence of being heavily browsed. Approximately 500 willow saplings were counted near cell 3 and 50 willows were counted near cell 5.

3.3. Soil

Soils are mapped in the Granite County Soil Survey as the Blossberg loam and Nythar-Flintcreek Complex. Both the Bossberg loam and Nythar-Flintcreek Complex are listed as hydric soils for Granite County (NRCS 2010).

Test pits T-1/SP-2 and T-2/SP-2 were located in areas defined as wetlands (Wetland Data Forms, Appendix B). The soil profile at T-1/SP-2 revealed a black (10YR 2/1), sandy clay soil with dark red (2.5YR 3/6) redoximorphic features. Hydric soil indicators the low chroma color and the inclusion on National Hydric Soils list. Test pit PR 2-2 contained dark grayish brown (10YR 4/2) sandy clay soil. The mapped soil series is included on the National Hydric Soils list. Although test pits T-1/SP-1 and T-2/SP-1 were not classified as wetlands due to the lack of hydrophytic vegetation and wetland hydrology, the low chroma classified the soils in these pits as hydric. T-1/SP-1 revealed a black (10YR 2/1),

sandy clay soil. Site T-2/SP-1 revealed very dark grey (10YR 3/1) clay soils. The dark color of these soils may be attributed to increased organics within the upper solum as a result of development under mollic conditions.

3.4. Wetland Delineation

The wetland and upland boundaries are shown on Figure 3 (Appendix A). Wetland and open water acreages delineated from 2002 to 2010 are summarized in Table 4. The total aquatic habitat increased by 2.98 acres. The net wetland acreage increased by 3.21 acres in 2010. The open water area decreased by 0.23 acre in 2010. The primary wetland expansion occurred in cell 1 and cell 2.

Table 4. Aquatic Habitat acreages from 2002 to 2010.

Aquatic Habitat	2002 (acre)	2003 (acre)	2004 (acre)	2005 (acre)	2006 (acre)	2007 (acre)	2008 (acre)	2010 (acre)
Gross Wetland Area	24.35	23.51	23.38	23.20	23.82	23.08	22.62	25.60
Open Water Area	(1.90)	(1.90)	(0.61)	-1.27	(1.08)	(1.08)	(1.08)	0.85
Net Wetland Area	**22.45**	**21.61**	**22.77**	**21.93**	**22.74**	**22.00**	**21.54**	**24.75**

3.5. Wildlife

Wildlife species observed onsite from 2002 to 2010 are listed in Table 5 (Monitoring Form, Appendix B). Bird species identified in 2010 are listed in bold type. The behavior and habitat codes are included on the Monitoring Form (Appendix B). The ten nesting structures were actively being used and in good condition.

Table 5. Wildlife species observed at the Peterson Ranch Wetland Mitigation Site from 2002 to 2010.

COMMON NAME	SCIENTIFIC NAME
BIRD	
American Coot	*Fulica americana*
American Crow	*Corvus brachyrhynchos*
American Robin	*Turdus migratorius*
Bald Eagle	*Haliaeetus leucocephalus*
Black-billed Magpie	*Pica hudsonia*
Bobolink	*Dolichonyx oryzivorus*
Bohemian Waxwing	*Bombycilla garrulus*
Brewer's Blackbird	*Euphagus cyanocephalus*
Brown-headed Cowbird	*Molothrus ater*
Cedar Waxwing	*Bombycilla cedrorum*
Cliff Swallow	*Petrochelidon pyrrhonota*
Common Merganser	*Mergus merganser*

Species first identified in 2010 are listed in **bold** type.

Table 6. (Continued). Wildlife species observed at the Peterson Ranch Wetland Mitigation Site from 2002 to 2010.

COMMON NAME	SCIENTIFIC NAME
BIRD	
Common Raven	*Corvus corax*
Eastern Kingbird	***Tyrannus tyrannus***
Golden Eagle	*Aquila chrysaetos*
Gray Catbird	*Dumetella carolinensis*
Great Blue Heron	***Ardea herodias***
Killdeer	***Charadrius vociferus***
Lesser Scaup	*Aythya affinis*
Mallard	*Anas platyrhynchos*
Marsh Wren	*Cistothorus palustris*
Mountain Bluebird	*Sialia currucoides*
Mourning Dove	***Zenaida macroura***
Northern Flicker	*Colaptes auratus*
Red-winged Blackbird	*Agelaius phoeniceus*
Sandhill Crane	***Grus canadensis***
Song Sparrow	*Melospiza melodia*
Spotted Sandpiper	*Actitis macularius*
Tree Swallow	*Tachycineta bicolor*
Vesper Sparrow	*Pooecetes gramineus*
Western Meadowlark	*Sturnella neglecta*
Willow Flycatcher	*Empidonax traillii*
Wilson's Phalarope	*Phalaropus tricolor*
Wilson's Snipe	*Gallinago delicata*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
MAMMAL	
Beaver	***Castor canadensis***
Coyote	*Canis latrans*
Deer Spp.	
Red Fox	*Vulpes vulpes*

Species first identified in 2010 are listed in **bold** type.

3.6. Functional Assessment

Functional assessments of the site have been completed from 2002 (Baseline) to 2010 (Table 6). The 2010 Wetland Assessment Form is included in Appendix B. The site was divided into three AAs, AA-1, AA-2, and AA-3. Area AA-1 encompassed 9.25 acres that included constructed cells 1 and 2 and the surrounding emergent wetlands and wet meadows. The AA increased by 2.98 acres (the total increase in aquatic habitat) from 2008 to 2010. Area AA-2 consisted of three acres of scrub-shrub habitat located along the irrigation ditch. Area AA-3 encompassed 13.35 areas that included cells 3, 4, and 5.

Assessment areas 1 and 2 both increased in percent of possible score achieved between 2008 and 2010. The AA-1 site received a Category III rating with 50 percent of the total score. Low structural diversity and cover density adversely

Table 7. Summary of 2002 to 2010 wetland function and value ratings and functional points at the Peterson Ranch Wetland Mitigation Project.

Function and Value Parameters - MDT Montana Wetland Assessment Method	2002 Baseline	2007 AA 1[1]	2007 AA 2[1]	2007 AA 3[1]	2008 AA 1[2]	2008 AA 2[2]	2008 AA 3[2]	2010 AA 1[2]	2010 AA 2[2]	2010 AA 3[2]
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0)	Low (0)	Low (0)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	Mod (0.7)	Mod (0.7)	Low (0.1)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
General Wildlife Habitat	Low (0.1)	Mod (0.5)	Mod (0.7)	Mod (0.7)	Mod (0.5)	Mod (0.7)	Mod (0.7)	Mod (0.5)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flood Attenuation	NA	Mod (0.5)	Low (0.3)	Mod (0.5)	Mod (0.6)	High (0.9)	Mod (0.6)	Mod (0.6)	High (0.9)	Mod (0.6)
Short and Long Term Surface Water Storage	High (1.0)	High (0.8)	High (0.8)	High (0.8)	High (1.0)	High (0.8)	High (1.0)	High (1.0)	High (0.8)	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.5)	Mod (0.7)	High (1.0)	Mod (0.7)	Mod (0.7)	High (0.9)	High (1.0)	Mod (0.7)	High (0.9)	High (1.0)
Sediment/Shoreline Stabilization	NA	Low (0.3)	High (1.0)	High (1.0)	Low (0.3)	High (1.0)	High (1.0)	Low (0.3)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.7)	High (0.9)	High (0.8)	High (0.9)	Mod (0.6)	Mod (0.7)	Mod (0.6)	Mod (0.6)	High (0.8)	Mod (0.6)
Groundwater Discharge/Recharge	UNK	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.2)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.2)	Low (0.3)	Low (0.3)	Low (0.2)	Low (0.3)	Low (0.3)
Recreation/Education Potential	Low (0.1)	Low (0.1)	Low (0.3)	Low (0.3)	NA	NA	NA	NA	NA	NA
Actual Points / Possible Points	**3.0 / 8**	**5.2 /11**	**6.9 / 11**	**6.9 / 11**	**5.0 / 10**	**6.9 / 10**	**6.8 / 10**	**5.5 / 10**	**7.0/10**	**6.8 / 10**
% of Possible Score Achieved	**38%**	**47%**	**63%**	**63%**	**50%**	**69%**	**68%**	**55%**	**70%**	**68%**
Overall Category	**III**	**III**	**III**	**III**	**III**	**II**	**II**	**III**	**II**	**II**
Total Acreage of Assessed Wetlands and Open Water within Easement by AA	**22.60**	**6.47**	**3.00**	**13.61**	**6.27**	**3.00**	**13.35**	**9.25**	**3.00**	**13.35**
Functional Units (acreage x actual points)	**67.80**	**33.64**	**20.70**	**93.91**	**31.35**	**20.70**	**90.78**	**50.88**	**21.00**	**90.78**
Total Acreage of Assessed Wetlands and Open Water on Site (acre)	**22.60**	**23.08**			**22.62**			**25.60**		
Total Functional Units on Site	**67.80**	**148.25**			**142.83**			**162.66**		
Net Acreage Gain (assessed wetlands and open water only) (acre)	NA	**0.48**			**0.20**			**3.00**		
Net Functional Unit Gain	NA	**80.45**			**54.97**			**94.86**		

[1]2007 conditions were assessed using the 1999 MDT MWAM.
[2]2008 conditions were assessed using the 2008 MDT MWAM.

affected the overall point scores. Ratings were high for short and long term surface water storage and groundwater recharge and discharge. The increase in assessment acreage raised the total function units to 50.88 in 2010. Site AA-2 was rated slightly higher in 2010 in the production export/food chain support function and received a Category II rating with 70 percent of the total points possible. Functional ratings were high for flood attenuation, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, and groundwater recharge and discharge. The functional assessment category and percent of possible score remained consistent for AA-3 between 2008 and 2010. Site AA-3 received a Category II rating with 68 percent of the total points possible. Ratings were high for sediment/nutrient/toxicant removal, sediment/shoreline stabilization, and groundwater recharge and discharge.

The mitigation site achieved a net acreage gain above the 2002 baseline of 3.0 acres in 2010 and a functional unit gain of 94.86. The site received a low rating (0.3) in the baseline assessment for Threatened and Endangered (T&E) habitat as a result of documented, incidental habitat associated with an observation of a bald eagle *(Haliaeetus leucocephalus)*. The bald eagle was de-listed in 2007 as an endangered species and is currently classified as a Montana Natural Heritage Program (MTNHP) species with an S3 rating. The delisting resulted in a decreased functional assessment rating and lower category rating in subsequent years for the T&E category. The AA-2 and AA-3 ratings in 2005, 2006, and 2008 increased in the MTNHP species habitat category owing to the presence of bobolink (*Dolichonyx oryzivorus*) documented within the assessment area during the monitoring events. The bobolink is rated as S3B by the MTNHP. Site AA 2 and AA 3 also both received a higher rating for sediment/shoreline stability as a result of the presence of mature shrubs and deep binding root systems associated with emergent vegetation along the banks of open water.

3.7. Photo Documentation

Photographs of photo points PP1 to PP6 are included in Appendix C. The endpoints of Transect 1 and 2 are shown on pages C-2 and C-3 of Appendix C.

3.8. Maintenance Needs

Infestations of Priority 2B noxious weeds including houndstounge, spotted knapweed, and Canada thistle were mapped on Figure 3 (Appendix A). The weeds were sprayed by MDT in spring 2010. The ten bird boxes were being used and appeared in good condition during the 2010 field investigation.

3.9. Credit Summary

Wetland and open water acreages delineated from 2002 to 2010 are summarized in Table 4. The total aquatic habitat increased in 2010 by 2.98 acres since 2008. The net wetland acreage increased by 3.21 acres in 2010 and the open water area decreased by 0.23 acre in 2010, likely the result of increased emergent vegetation development. The primary wetland expansion occurred in cells 1 and 2. The Peterson Ranch mitigation project was constructed prior to the

development of performance standards. The fulfillment of the objectives, as stated in the introduction of this report, has mostly been marginal. The mitigation site achieved a net acreage gain, above the 2002 baseline, of 3.0 acres in 2010 and a functional unit gain of 90.23. Goals for this project included the creation of 17.5 acres of wetlands, improved functions and values ratings, enhancement of riparian vegetation through plantings and seeding, development of a grazing management plan to enhance 80.6 acres, and the creation of a protective easement. The protective easement has been established for the mitigation area; however, grazing continues to impair this area. Implementation of the grazing plan and continued development of riparian vegetation and wetland habitat may allow for the fulfillment of the project goals for this site in the future.

4. REFERENCES

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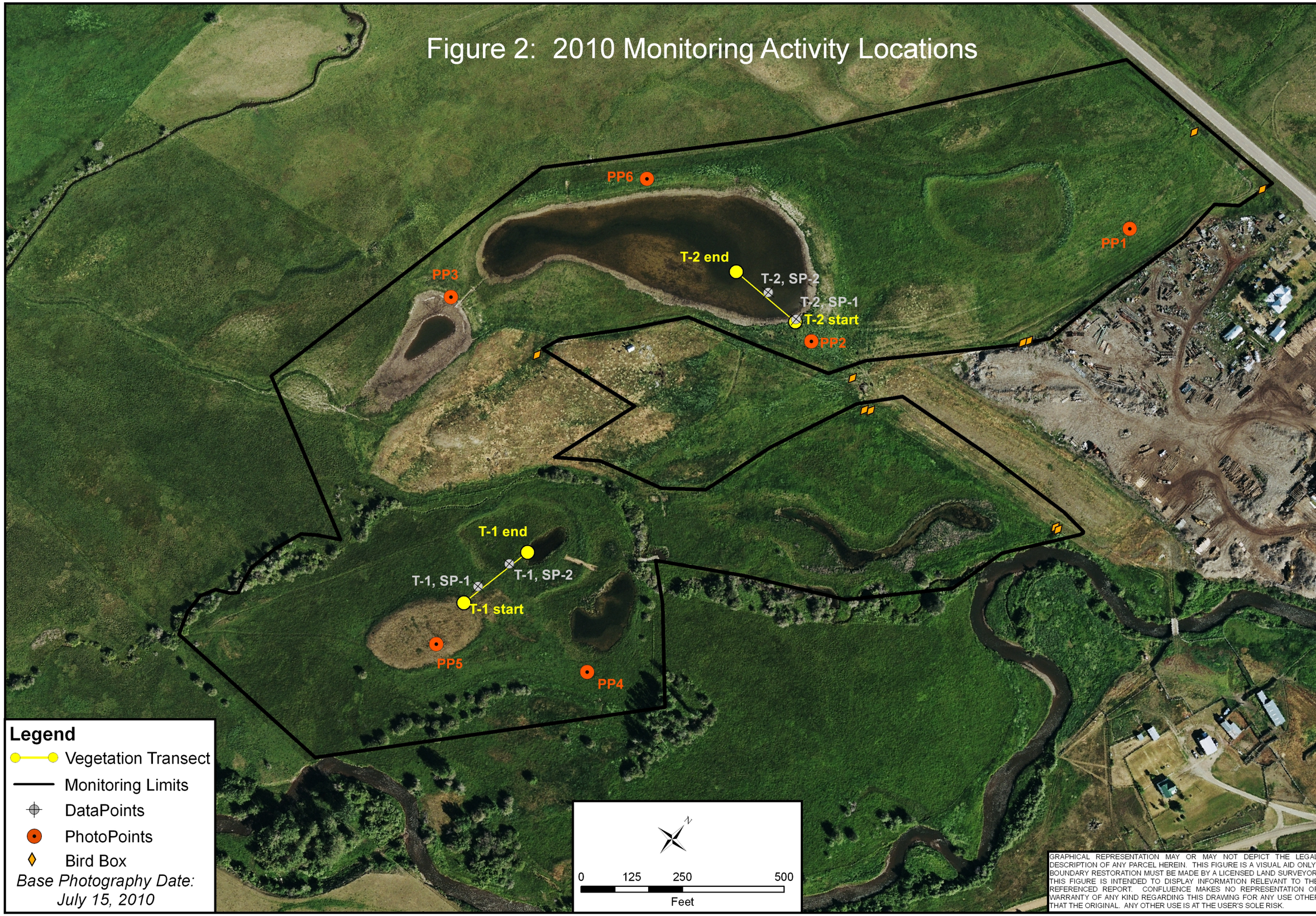
Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring
Peterson Ranch
Granite County, Montana

Figure 2: 2010 Monitoring Activity Locations



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LOCATION: Granite Co., MT

PROJECT NO: MDT.004

FILE: PetersonHall/Monitor2010.mxd

Project Name
Peterson Ranch Mitigation Site

Drawing Title
2010 Monitoring Activity Locations

DRAWN BCS | CHECKED BV | APPROVED JL

SCALE: Noted

Drawn: November 8, 2010

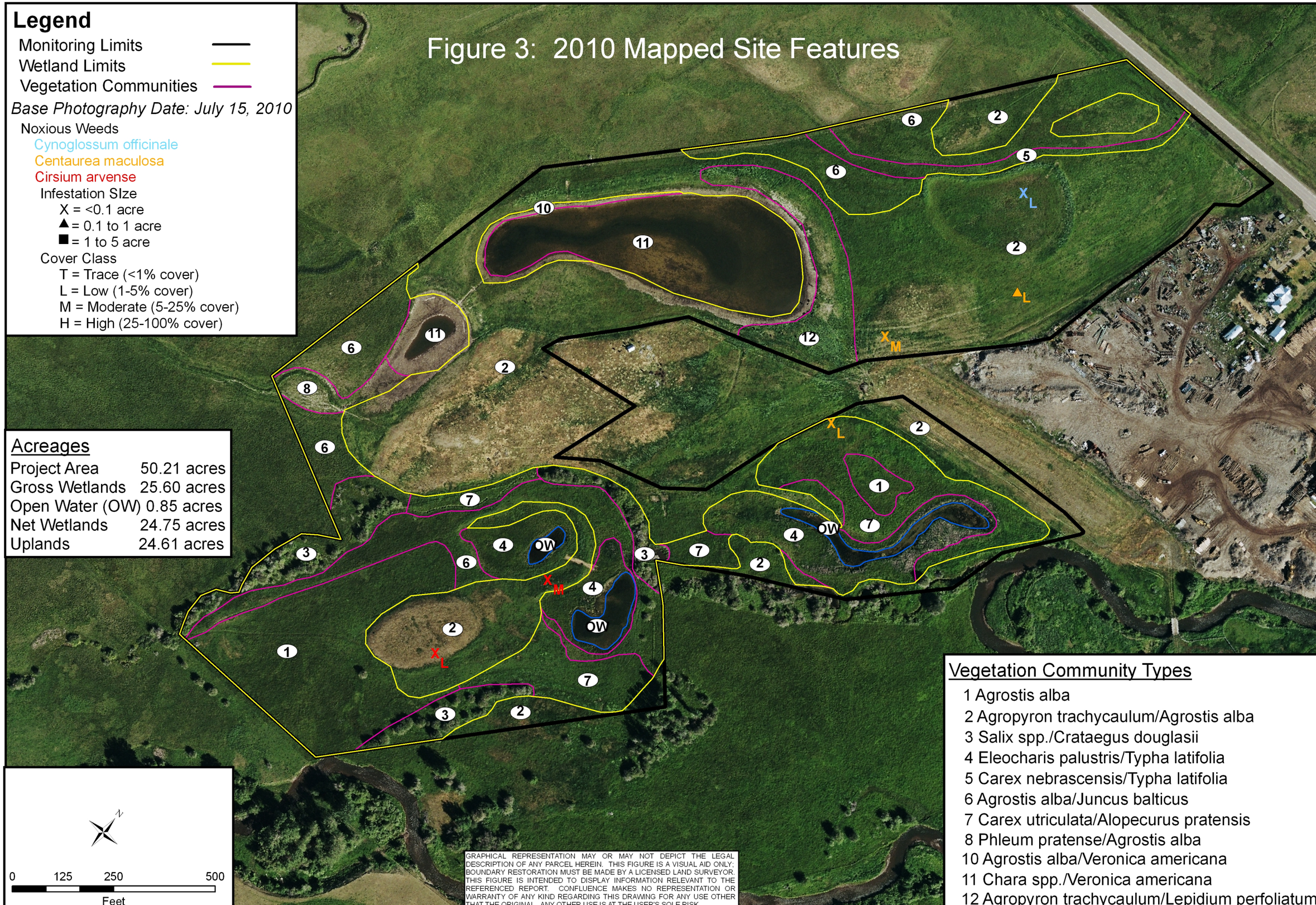
PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 2

REV -

Figure 3: 2010 Mapped Site Features



LOCATION: Granite Co., MT
PROJECT NO: MDT.004
FILE: PetersonHall/Veg2010.mxd

Project Name
Peterson Ranch Mitigation Site

Drawing Title
2010 Mapped Site Features

DRAWN BCS | CHECKED BV | APPROVED JL
SCALE: Noted
Drawn: November 8, 2010
PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

REV -

Appendix B

2010 MDT Wetland Mitigation Site Monitoring Form
2010 USACE Wetland Determination Data Form
2010 MDT Wetland Assessment Form

MDT Wetland Mitigation Monitoring
Peterson Ranch
Granite County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Peterson Ranch Assessment Date/Time 8/11/2010

Person(s) conducting the assessment: E. Nyquist

Weather: Sunny approx. 75 degrees Location: E. of Hall

MDT District: Upper Clark Fork Milepost: NA

Legal Description: T 10N R 13W Section(s) 35

Initial Evaluation Date: 7/31/2002 Monitoring Year: 8 #Visits in Year: 0

Size of Evaluation Area: 50.21 (acres)

Land use surrounding wetland:

Agriculture & forestry products

HYDROLOGY

Surface Water Source: Irrigation Ditch and flood irrigation

Inundation: ☑ Average Depth: 1 **(ft)** Range of Depths: 0-4 **(ft)**

Percent of assessment area under inundation: 25 %

Depth at emergent vegetation-open water boundary: 1 **(ft)**

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

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

Groundwater Monitoring Wells

Record depth of water surface below ground

Additional Activities Checklist:

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

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

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

Hydrology Notes:

Water levels are significantly lower in excavated wetlands 1 and 2 than the 2008 and 2009 monitoring. Recent evidence (saturation) of higher water levels but predominantly unvegetated adjacent to open water areas 1 and 2. Moderate to intensive grazing occurred during growing season and Canada thistle and musk thistle are common throughout site.

VEGETATION COMMUNITIES

Site Peterson Ranch

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

* Indicates accepted spp name not on '88 list.

Community # 1 Community Type: Agrostis alba /

Species	Cover class	Species	Cover class
Agropyron trachycaulum	2	Agrostis alba	4
Carex nebrascensis	2	Festuca pratensis	2
Hordeum jubatum	1	Juncus balticus	1
Potentilla anserina	1	Scirpus acutus	0
Trifolium pratense	1	Typha latifolia	0

Comments:

Emergent vegetation type dominated by grasses and sedges

Community # 2 Community Type: Agropyron trachycaulum / Agrostis alba

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agropyron trachycaulum	4
Agrostis alba	3	Alopecurus pratensis	0
Carduus nutans	0	Chenopodium album	0
Cirsium arvense	1	Helianthus annuus	0
Hordeum jubatum	1	Malva neglecta	1
Potentilla anserina	1	Taraxacum officinale	1
Thlaspi arvense	0		

Comments:

Dry slopes surrounding created ponds. Area dominated by upland grasses and some invasive species present.

Community # 3 Community Type: Salix spp. / Crataegus douglasii

Species	Cover class	Species	Cover class
Agrostis alba	2	Carex utriculata*	3
Cornus stolonifera	1	Crataegus douglasii	4
Geum macrophyllum	0	Populus trichocarpa*	2
Ribes americanum	1	Salix bebbiana	4
Salix exigua	2	Salix geyerana	2

Comments:

Scrub-shrub vegetation type located along existing side channel/irrigation ditch.

Community # 4 Community Type: Eleocharis palustris / Typha latifolia

Species	Cover class	Species	Cover class
Agrostis alba	3	Alopecurus pratensis	2
Beckmannia syzigachne	1	Carex nebrascensis	1
Eleocharis palustris	4	Glyceria striata	0
Juncus confusus	1	Juncus ensifolius	1
Juncus nodosus	1	Polygonum amphibium	0
Potentilla anserina	0	Scirpus acutus	2
Typha latifolia	4	Veronica americana	0

Comments:

Emergent vegetation type surrounding created OW/ponds #4 & #5.

Community # 5 Community Type: Carex nebrascensis / Typha latifolia

Species	Cover class	Species	Cover class
Alopecurus pratensis	3	Carex nebrascensis	4
Potentilla anserina	0	Triglochin maritimum	0
Typha latifolia	4		

Comments:

Depressional wetlands found within areas of lower topography running across northwest corner of the mitigation site. Hydrology source is groundwater and surface flow from irrigation water.

Community # 6 Community Type: Agrostis alba / Juncus balticus

Species	Cover class	Species	Cover class
Agropyron repens	1	Agrostis alba	4
Alopecurus pratensis	1	Carex nebrascensis	1
Juncus balticus	4	Phleum pratense	2
Rumex crispus	0	Trifolium pratense	1
Triglochin maritimum	0		

Comments:

Wetland meadow complex, located between drier upland slopes and emergent wetlands listed as Community Type 5. Vegetation fringe between upland and wetland areas, community type considered wetland.

Community # 7 Community Type: Carex utriculata* / Alopecurus pratensis

Species	Cover class	Species	Cover class
Alopecurus pratensis	3	Carex utriculata*	4
Juncus balticus	1	Poa palustris	0
Veronica americana	1		

Comments:

Vegetation along irrigation ditch, emergent wetlands with no shrub coverage. Ditch and surrounding bottoms inundated with low flow present.

Community # 8 Community Type: Phleum pratense / Agrostis alba

Species	Cover class	Species	Cover class
Agrostis alba	4	Beckmannia syzigachne	1
Carex nebrascensis	2	Eleocharis palustris	3
Glyceria striata	1	Hordeum jubatum	1
Juncus balticus	0	Juncus mertensianus	1
Phleum pratense	4	Salix spp.	0
Scirpus acutus	0	Typha latifolia	2
Veronica americana	1		

Comments:

Upper basin dominated by emergent wetland vegetation with intermittent drainage into pond #1. Wetland areas inundated. Hydrology sources come from irrigation ditch. Increase in emergent vegetation cover. Willow cuttings heavily browsed.

Community # 10 Community Type: Agrostis alba / Veronica americana

Species	Cover class	Species	Cover class
Agrostis alba	4	Alopecurus pratensis	3
Carex aquatilis	0	Eleocharis palustris	3
Phleum pratense	0	Potentilla anserina	1
Trifolium pratense	0	Veronica americana	2

Comments:

Emergent wetland type located along the fringe of pond #2's standing water.

Community # 11 Community Type: Chara spp. / Veronica americana

Species	Cover class	Species	Cover class
Chara spp.	5	Eleocharis palustris	0
Scirpus acutus	0	Typha latifolia	1
Veronica americana	1		

Comments:

Area located along shoreline with a minor emergent vegetation cover. Lowest elevation of open water area inundated during on-site investigation with predominantly bare ground adjacent to the open water.

Community # 12 Community Type: Agropyron trachycaulum / Lepidium perfoliatum

Species	Cover class	Species	Cover class
Agropyron trachycaulum	3	Carduus nutans	2
Cirsium arvense	2	Elymus cinereus	4
Lepidium perfoliatum	1	Poa pratensis	1
Sisymbrium altissimum	0	Tragopogon dubius	0

Comments:

Area located on dry berms within the western side of the easement. Community type 12 consists of several areas with aggressive non-native and invasive plant species. Community type has a small percentage of noxious weeds. This site was sprayed to control weeds in 2010.

VEGETATION TRANSECTS

Site: Peterson Ranch Date: 8/11/2010

Transect Number: 1 **Compass Direction from Start:** 0

Interval Data:

Ending Station 127 **Community Type:** Agropyron trachycaulum / Agrostis alba

Species	Cover class	Species	Cover class
Agropyron repens	3	Agropyron trachycaulum	4
Agrostis alba	1	Bromus inermis	2
Cirsium arvense	1	Juncus balticus	0
Poa pratensis	4	Taraxacum officinale	1
Trifolium pratense	0		

Ending Station 200 **Community Type:** Eleocharis palustris / Typha latifolia

Species	Cover class	Species	Cover class
Agrostis alba	1	Alopecurus pratensis	4
Beckmannia syzigachne	1	Carex nebrascensis	3
Carex utriculata*	2	Eleocharis palustris	3
Glyceria striata	1	Juncus ensifolius	0
Polygonum amphibium	1	Potentilla anserina	0
Triglochin maritimum	0	Typha latifolia	1

Transect Notes:

Transect Number: 2 **Compass Direction from Start:** 270

Interval Data:

Ending Station 12 **Community Type:** Agropyron trachycaulum / Agrostis alba

Species	Cover class	Species	Cover class
Agropyron repens	4	Agropyron trachycaulum	2
Agrostis alba	1	Bromus inermis	1
Elymus cinereus	1	Poa pratensis	4

Ending Station 198 **Community Type:** Chara spp. / Veronica americana

Species	Cover class	Species	Cover class
Chara spp.	1		

Transect Notes:

Bare ground with patches of decadent Chara spp. Open water at 198 feet. Area was inundated during the first half of the 2010 growing season. Area has been heavily grazed.

PLANTED WOODY VEGETATION SURVIVAL

Peterson Ranch

Planting Type	#Planted	#Alive	Notes
CORSTO		0	
ELECOM		0	
PRUVIR		6	
RIBAUR		0	
ROSWOO		0	
SALIX Spp.		550	Similar numbers and conditions exist in 2010 as observed in previous monitoring. Evidence of heavy browse observed on plantings in pond #1 & #2 areas west of the irrigation ditch. Willows counted along pond #3 (approximately 500) and pond # 5 (50).

Comments

Peterson Ranch

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: _____

How many? 10

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
Bobolink			
Eastern Kingbird	1		OW
Great Blue Heron	1	FO	
Killdeer	1		MF
Mourning Dove	2	FO	
Sandhill Crane	2	BP	WM

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Beaver	1	No	No	No	Observed in Cell #5

Wildlife Comments:

Peterson Ranch

PHOTOGRAPHS

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

Photograph Checklist:

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

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

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

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

Photo #	Latitude	Longitude	Bearing	Description
103			360	Photo Point 5 - View facing north towards depressions 4 and 5. Upland habitat in foreground with emergent wetlands developing in background.
106			360	Photo Point 4 - View facing north toward pond 5. Emergent vegetation developing around depression fringe.
114			360	View north along vegetation transect #1
117			180	View south from Photo Point #3 at Excavated Wetland 1
120			360	Photo Point 3 - View facing north at the southern end of created wetland depression 2.
121			45	Photo Point 6 - View facing northeast across excavated wetland 2. Area is mostly upland with the open water fringe predominantly devoid of vegetation.
124			270	Photo Point 2 - View facing west along Transect 2. Water levels are lower than 2008 monitoring and vegetation is absent due to hydrology
127			270	Photo Point 1 - View facing across the mitigation site

Comments:

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☐ Map vegetation community boundaries

☐ Complete Vegetation Transects

Soils

☐ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

Western half of the assessment area has been heavily grazed.

Functional Assessments

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

Functional Assessment Comments:

Maintenance

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

If yes, do they need to be repaired? No

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

Were man-made structures built or installed to impound water or control water flow

into or out of the wetland? No

If yes, are the structures working properly and in good working order? No

If no, describe the problems below.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Peterson Ranch City/County: Granite Sampling Date: 8/11/2010

Applicant/Owner: MDT State: MT Sampling Point: Transect 1-1

Investigator(s): E. Nyquist Section, Township, Range: S 35 T 10N R 13W

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

Subregion (LRR): LRR E Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Blossberg loam

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
Upland habitat

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Agropyron repens	35	☑	FACU
2. Agropyron trachycaulum	25	☑	FAC
3. Bromus inermis	25	☑	NI
4. Trifolium repens	10	☐	FACU
5. Taraxacum officinale	10	☐	FACU
6. Agrostis alba	5	☐	FAC+
7.		☐	
8.		☐	
9.		☐	
10.		☐	
11.		☐	
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.		☐	
2.		☐	
	____ = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: Transect 1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 - 10	10YR 2/1						nedium gravels, la	Blossberg loam, 0 to 4 percent slopes

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☑ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Typic Endoaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: No Hydro Indicators

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Peterson Ranch City/County: Granite Sampling Date: 8/11/2010

Applicant/Owner: MDT State: MT Sampling Point: Transect 1-2

Investigator(s): E. Nyquist Section, Township, Range: S 35 T 10N R 13W

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

Subregion (LRR): LRR E Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Blossberg loam

Do Normal Circumstances Exist on this site? Yes ☑

Is the site significantly disturbed (Atypical Situation)? Yes ☐

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
Wetland habitat

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Eleocharis palustris	25	☑	OBL
2. Carex nebrascensis	30	☑	OBL
3. Typha latifolia	5	☐	OBL
4. Potentilla anserina	10	☐	OBL
5. Alopecurus pratensis	15	☐	FACW
6. Carex rostrata var utriculata	5	☐	OBL
7. Agrostis alba	10	☐	FAC+
8. Beckmannia syzigachne	5	☐	OBL
9.		☐	
10.		☐	
11.		☐	
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.		☐	
2.		☐	
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: Transect 1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/1	100					Clay Loam	Blossberg loam, 0 to 4 percent slopes
7-20	10YR 2/1	95	2.5YR 3/6	5	C	M	Clay	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☑ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Typic Endoaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☑	No ☐	Depth (inches): 12

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Peterson Ranch City/County: Granite Sampling Date: 8/11/2010

Applicant/Owner: MDT State: MT Sampling Point: Transect 2-1

Investigator(s): E. Nyquist Section, Township, Range: S 35 T 10N R 13W

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

Subregion (LRR): LRR E Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Nythar-Flintcreek Complex

Do Normal Circumstances Exist on this site? Yes ☐

Is the site significantly disturbed (Atypical Situation)? Yes ☑

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
Upland habitat. Water levels significantly lower than monitoring efforts in 2008. No inundation or saturation observed at this data point.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Agropyron trachycaulum	25	☑	FAC
2. Agropyron repens	30	☑	FACU
3. Poa pratensis	25	☑	FACU+
4. Taraxacum officinale	5	☐	FACU
5. Trifolium pratense	5	☐	FACU
6. Festuca pratensis	5	☐	FACU+
7.		☐	
8.		☐	
9.		☐	
10.		☐	
11.		☐	
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.		☐	
2.		☐	
	____ = Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: Transect 2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					Loam	Nythar-Flintcreek Complex, 0 to 4 perce
3-20	10YR 3/1	100					Clay	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☑ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Cumulic Endoaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:
gleyed or low-chroma colors; listed on local hydric soils list

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: Water levels significantly lower than 2008 monitoring efforts. Area heavily grazed by cattle.

WETLAND DETERMINATION DATA FORM – Routine Weltand Delineation, 1987 COE Protocol

Project/Site: Peterson Ranch City/County: Granite Sampling Date: 8/11/2010

Applicant/Owner: MDT State: MT Sampling Point: Transect 2-2

Investigator(s): E. Nyquist Section, Township, Range: S 35 T 10N R 13W

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

Subregion (LRR): LRR E Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Nythar-Flintcreek Complex

Do Normal Circumstances Exist on this site? Yes ☐

Is the site significantly disturbed (Atypical Situation)? Yes ☑

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
Due to recent irrigation practices and possibly cattle grazing, the majority of this area is unvegetated.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Charra spp.	10	☐	
2. Veronica americana	5	☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
8.		☐	
9.		☐	
10.		☐	
11.		☐	
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.		☐	
2.		☐	
	_____ = Total Cover		

% Bare Ground in Herb Stratum 85

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 0 (B)

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

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Decadent charra spp. And veronica americana but predominantly bare gound that was recently inundated.

SOIL

Sampling Point: Transect 2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Clay Loam	Nythar-Flintcreek Complex, 0 to 4 perce
6-20	10YR 4/2	100					Sandy Clay	

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

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquatic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Soils List
- ☑ Listed on National Soils List
- ☐ Other (explain in remarks)

Taxonomy Subgroup: Cumulic Endoaquolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:
Soils listed as hydric on the local NRCS soil survey; area was recently inundated but water levels are lower than 2008 monitoring.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

- ☐ Innundated
- ☑ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage patterns in wetlands

Secondary Indicators (2 or more required)

- ☐ Oxidized Rhizospheres along Living Roots
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Area is saturated and appears to have been recently inundated but water level is significantly lower than the 2008 monitoring.

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Peterson Ranch **2. MDT project#** **Control#**

3. Evaluation Date 8/11/2010 **4. Evaluators** E. Nyquist **5. Wetland/Site# (s)** AA-1

6. Wetland Location(s): T 10N **R** 13E **Sec1** 35 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed Upper Clark Fork-2 **County** Granite

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 9.25

How assessed: Measured e.g. by GPS

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

9. Assesssment area (AA) size (acres) 9.25

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Depressional	Emergent Wetland	Artificial	Seasonal/Intermittant	60
Depressional	Unconsolidated Bottom	Excavated	Permanent/Perennial	35
Depressional	Aquatic Bed	Excavated	Permanent/Perennial	5

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

Moderate/intensive cattle grazing occuring on the site.

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

Centaurea maculosa, Cirsium arvense, Cynoglossum officinale, and Chrysanthemum leucanthemum

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

Thee AA consists of two ponds (open water 1 and 2) with emergent wetlands and associated wetland meadows. Hydrology is influenced by irrigation ditches and groundwater. Surrounding landuse includes low-density residential areas, livestock grazing, and a timber mill operation.

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

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

Comments:

SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT

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

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

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

Secondary habitat (list Species) ○ D ○ S

Incidental habitat (list species) ○ D ○ S

No usable habitat ☑ S

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

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

Sources for documented use MNHP, USFWS no habitat for bull trout, Canada lynx

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

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

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

Secondary habitat (list Species) ◉ D ○ S Bobolink (S3B)

Incidental habitat (list species) ○ D ◉ S Bald eagle

No usable habitat ☐ S

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

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

Sources for documented use MNHP, bobolinks observed along fence of AA by MDT

14C. General Wildlife Habitat Rating:

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

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

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

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

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

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

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

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

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

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

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

Comments

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

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

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

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

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

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

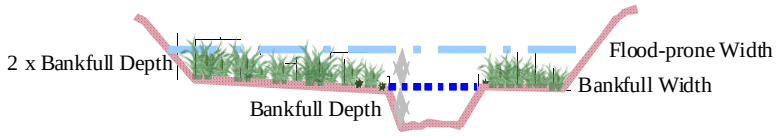
iii. Final Score and Rating: _____ **Comments:**

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

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

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

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



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

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

Comments:

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

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

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

Comments:

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .6M

Comments:

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

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

Comments:

14K. Uniqueness:

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

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

Comments:

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

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

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

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

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

Comments:

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): AA-1

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	5.55	☐
C. General Wildlife Habitat	M	.5	1	4.625	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.6	1	5.55	☑
F. Short and Long Term Surface Water Storage	H	1	1	9.25	☑
G. Sediment/Nutrient/Toxicant Removal	M	.7	1	6.475	☑
H. Sediment/Shoreline Stabilization	L	.3	1	2.775	☐
I. Production Export/Food Chain Support	M	.6	1	5.55	☐
J. Groundwater Discharge/Recharge	H	1	1	9.25	☑
K. Uniqueness	L	.2	1	1.85	☐
L. Recreation/Education Potential (bonus points)	0	0	NA	0	☐
Totals:		5.5	10	50.875	
Percent of Possible Score			**55** %		

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

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

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

☑

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

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

I **II** **III** **IV**

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Peterson Ranch **2. MDT project#** **Control#**

3. Evaluation Date 8/11/2010 **4. Evaluators** E. Nyquist **5. Wetland/Site# (s)** AA-2

6. Wetland Location(s): T 10N **R** 13E **Sec1** 35 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed Upper Clark Fork-2 **County** Granite

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 3

How assessed: Measured e.g. by GPS

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

9. Assesssment area (AA) size (acres) 3

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Scrub-Shrub Wetland		Seasonal/Intermittant	80
Riverine	Emergent Wetland	Excavated	Seasonal/Intermittant	15
Riverine	Rock Bottom	Excavated	Seasonal/Intermittant	5

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

Livestock grazing occurs

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

Cirsium arvense

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

The AA consisted of scrub-shrub habitat located along an irrigation ditch and open areas dominated by emergent vegetation.

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

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

Comments:

SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT

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

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

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

Secondary habitat (list Species) ○ D ○ S

Incidental habitat (list species) ○ D ○ S

No usable habitat ☑ S

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

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

Sources for documented use MNHP, USFWS no habitat for bull trout/Canada lynx

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

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

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

Secondary habitat (list Species) ● D ○ S Bobolink

Incidental habitat (list species) ○ D ○ S

No usable habitat ☐ S

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

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

Sources for documented use

14C. General Wildlife Habitat Rating:

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

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

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

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

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

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

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

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

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

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

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

Comments

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

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

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

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

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

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

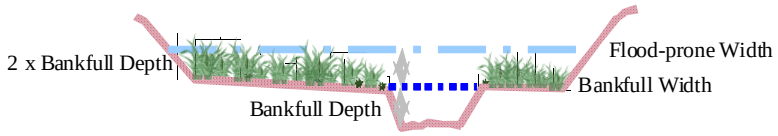
iii. Final Score and Rating: _____ **Comments:**

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

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

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

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



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

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

Comments: Entrenchment raito for the adjacent stream corridor was not measured during the 2010 field investigation.

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

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

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

Comments: _____

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

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

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

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

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

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

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

Comments:

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

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

Comments:

14K. Uniqueness:

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

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

Comments:

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

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

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

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

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

Comments:

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): AA-2

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	1.8	☐
C. General Wildlife Habitat	M	.7	1	2.1	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	H	.9	1	2.7	☑
F. Short and Long Term Surface Water Storage	H	.8	1	2.4	☑
G. Sediment/Nutrient/Toxicant Removal	H	.9	1	2.7	☑
H. Sediment/Shoreline Stabilization	H	1	1	3	☑
I. Production Export/Food Chain Support	H	.8	1	2.4	☑
J. Groundwater Discharge/Recharge	H	1	1	3	☐
K. Uniqueness	L	.3	1	0.9	☐
L. Recreation/Education Potential (bonus points)	0	0	NA	0	☐
Totals:		7	10	21	
Percent of Possible Score			**70** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)

☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
☐ Score of 1 functional point for Uniqueness; **or**
☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
☐ Percent of possible score > 80% (round to nearest whole #).

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

☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
☐ Score of .9 functional point for Uniqueness; **or**
☑ Percent of possible score > 65% (round to nearest whole #).

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

☐

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

☐ "Low" rating for Uniqueness; **and**
☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
☐ Percent of possible score < 35% (round to nearest whole #).

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

I **II** **III** **IV**

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Peterson Ranch **2. MDT project#** **Control#**

3. Evaluation Date 8/11/2010 **4. Evaluators** E. Nyquist **5. Wetland/Site# (s)** AA-3

6. Wetland Location(s): T 10N **R** 13E **Sec1** 35 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed Upper Clark Fork-2 **County** Granite

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 13.35

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 13.35

How assessed: Measured e.g. by GPS

Purpose of Evaluation

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Emergent Wetland	Excavated	Permanent/Perennial	70
Riverine	Unconsolidated Bottom	Excavated	Permanent/Perennial	25
Riverine	Aquatic Bed	Excavated	Permanent/Perennial	5

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

Livestock grazing occurs within AA

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

Centaurea maculosa, Cirsium arvense, Cynoglossum officinale, Carduus nutans

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

Thee AA consists of three excavated wetland ponds (open water areas 3,4, and 5). Hydrology is influenced by groundwater and seasonal flood irrigation from a irrigation ditch. Adjacent landuse includes low-density residential areas, agriculture, livestock grazing, and a timber mill production.

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

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

Comments:

SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT

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

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

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

Secondary habitat (list Species) ○ D ○ S

Incidental habitat (list species) ○ D ○ S

No usable habitat ☑ S

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

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

Sources for documented use MNHP, USFWS no habitat for bull trout/Canada lynx

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

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

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

Secondary habitat (list Species) ● D ○ S Bobolink

Incidental habitat (list species) ○ D ○ S

No usable habitat ☐ S

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

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

Sources for documented use

14C. General Wildlife Habitat Rating:

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

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

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

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

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

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

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

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

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

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

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

Comments

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

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

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

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

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

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

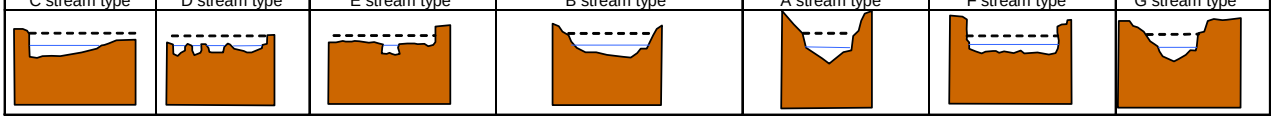
iii. Final Score and Rating: _____ **Comments:**

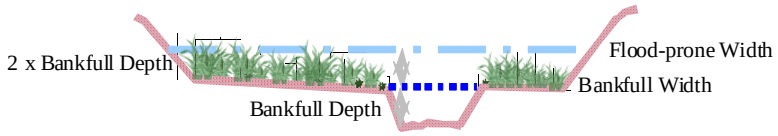
14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, click ☐ **NA** here and proceed to 14F.)

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

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

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





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

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

Comments:

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

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

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

Comments:

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

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

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

Comments:

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

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

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

Comments:

14I. Production Export/Food Chain Support:

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

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

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

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

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

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .6M

Comments:

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

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

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

Comments:

14K. Uniqueness:

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

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

Comments:

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

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

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

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

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

Comments:

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): AA-3

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	☐
B. MT Natural Heritage Program Species Habitat	M	.6	1	8.01	☐
C. General Wildlife Habitat	M	.7	1	9.345	☐
D. General Fish Habitat	NA	0	0	0	☐
E. Flood Attenuation	M	.6	1	8.01	☐
F. Short and Long Term Surface Water Storage	H	1	1	13.35	☑
G. Sediment/Nutrient/Toxicant Removal	H	1	1	13.35	☑
H. Sediment/Shoreline Stabilization	H	1	1	13.35	☑
I. Production Export/Food Chain Support	M	.6	1	8.01	☐
J. Groundwater Discharge/Recharge	H	1	1	13.35	☑
K. Uniqueness	L	.3	1	4.005	☐
L. Recreation/Education Potential (bonus points)	0	0	NA	0	☐
Totals:		6.8	10	90.78	
Percent of Possible Score			**68** %		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)

☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
☐ Score of 1 functional point for Uniqueness; **or**
☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
☐ Percent of possible score > 80% (round to nearest whole #).

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

☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
☐ Score of .9 functional point for Uniqueness; **or**
☑ Percent of possible score > 65% (round to nearest whole #).

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

☐

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

☐ "Low" rating for Uniqueness; **and**
☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
☐ Percent of possible score < 35% (round to nearest whole #).

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

I **II** **III** **IV**

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Peterson Ranch
Granite County, Montana

Photo Point 1 – *Photo 1*
Bearing: West
Location: Northern project area
Taken in 2009

Photo Point 1 – *Photo 1*
Bearing: West
Location: Northern project area
Taken in 2010

Photo Point 2 – *Photo 1*
Bearing: West
Location: T-2 start
Taken in 2009

Photo Point 2 – *Photo 1*
Bearing: West
Location: Near T-2 start
Taken in 2010

Photo Point 3 – *Photo 1*
Bearing: North
Location: South end of created wetland depression
Taken in 2009

Photo Point 3 – *Photo 1*
Bearing: North
Location: South end of created wetland depression
Taken in 2010

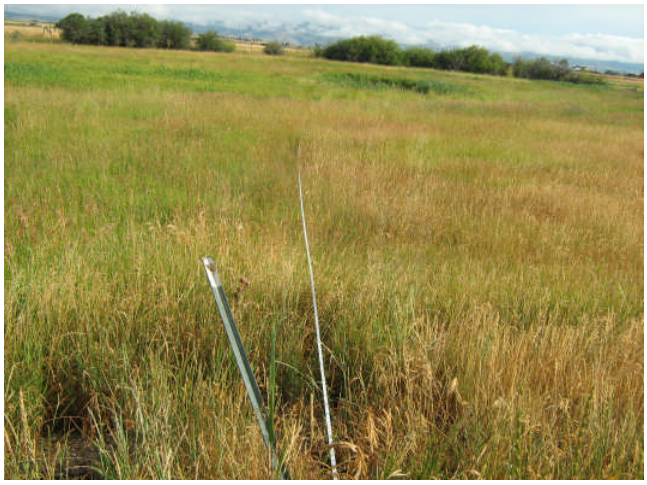
Photo Point 4 – *Photo 1*
Bearing: North
Location: Wetland depressions 4 & 5
Taken in 2009

Photo Point 4 – *Photo 1*
Bearing: North
Location: Wetland depressions 4 & 5
Taken in 2010

Photo Point 5 – *Photo 1*
Bearing: North
Location: Wetland depression 5
Taken in 2009

Photo Point 5 – *Photo 1*
Bearing: North
Location: Wetland depression 5
Taken in 2010

Photo Point 6 – *Photo 1*
Bearing: North
Location: Excavated wetland 2
Taken in 2010



Transect 1 – *Photo 1*
Bearing: North
Location: T-1 start
Taken in 2010

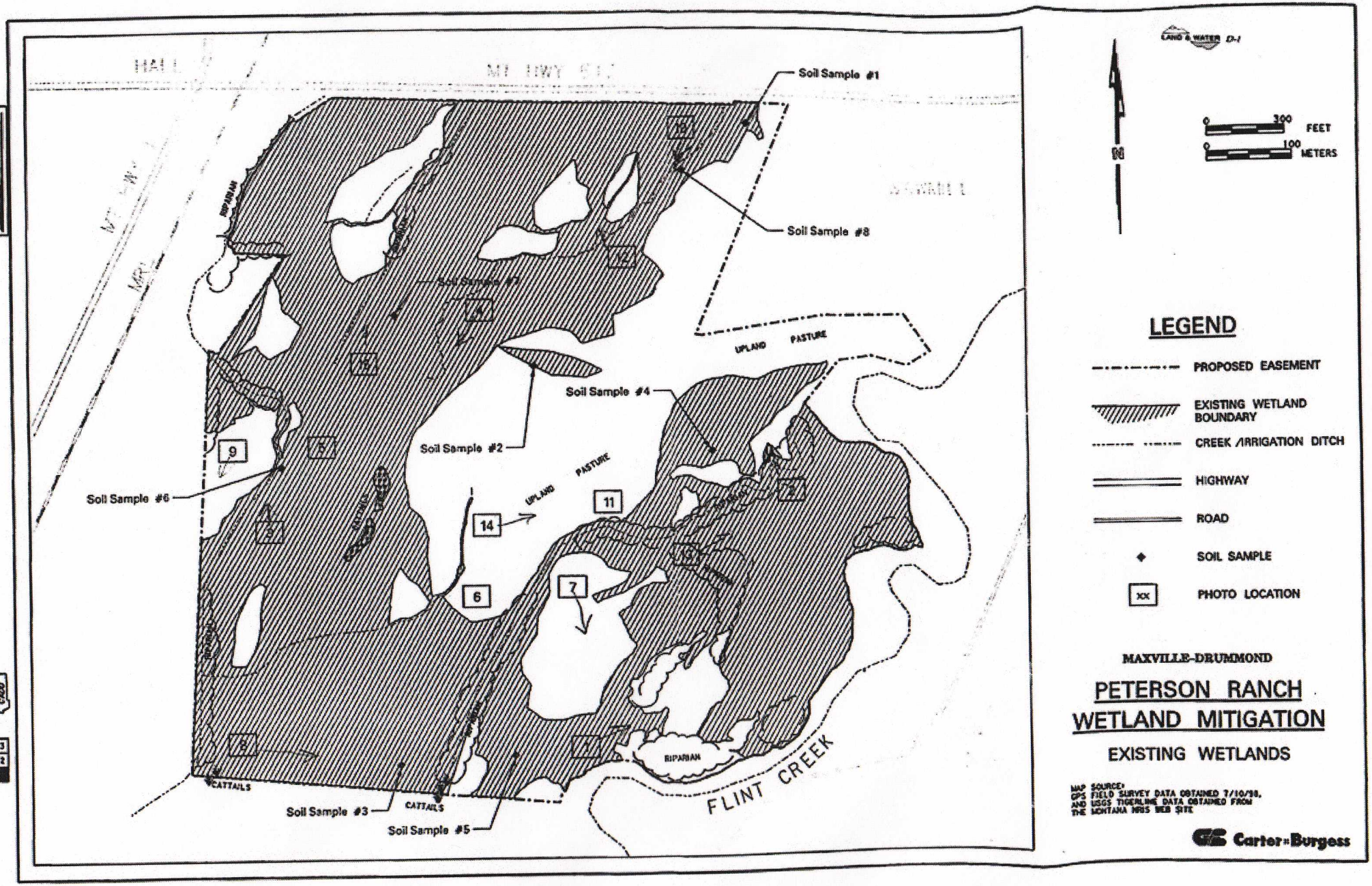
Photo Point 3 – *Photo 2*
Bearing: South

Location: Excavated wetland 1
Taken in 2010

Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring
Peterson Ranch
Granite County, Montana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Soil Sample #8
Soil Sample #7
Soil Sample #4
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Soil Sample #6
Soil Sample #3
Soil Sample #5
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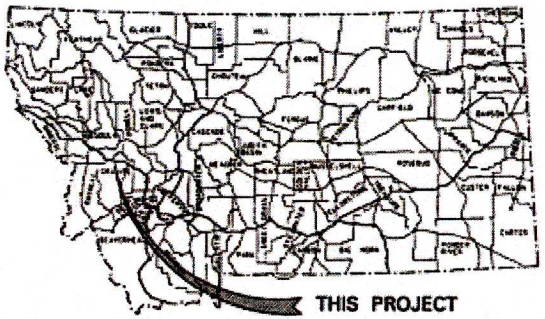
UPLAND PASTURE
RIPARIAN
CATTAILS
CATTAILS
FLINT CREEK
LAND & WATER D-1
300 FEET
100 METERS
LEGEND
PROPOSED EASEMENT
EXISTING WETLAND BOUNDARY
CREEK /IRRIGATION DITCH
HIGHWAY
ROAD
SOIL SAMPLE
PHOTO LOCATION
MAXVILLE-DRUMMOND
PETERSON RANCH
WETLAND MITIGATION
EXISTING WETLANDS
MAP SOURCE: GPS FIELD SURVEY DATA OBTAINED 7/10/98, AND USGS TIGERLINE DATA OBTAINED FROM THE MONTANA NRIS WEB SITE
Carter-Burgess

MONTANA DEPARTMENT OF TRANSPORTATION

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

LAND & WATER D-2

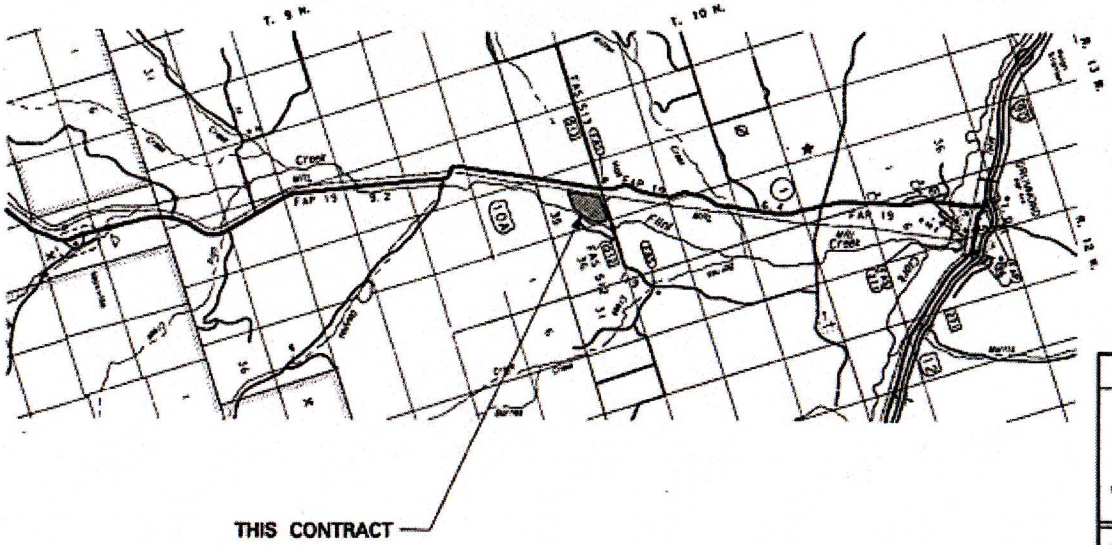
FEDERAL AID PROJECT NO. STPX 20 (19)
PETERSON WETLAND MITIGATION PLAN
GRANITE COUNTY



RECEIVED
MAY 17 2001
ENVIRONMENTAL

RECEIVED
JUN 10 2002
ENVIRONMENTAL

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



PLANS PREPARED BY

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P.O. BOX 16027
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RELATED PROJECTS

MAXVILLE-DRUMMOND
STPP 19-2(5)48

ASSOCIATED PROJECT ASSESSMENT NUMBERS

R/W & I.C.	
P.E.	

WGM Group, Inc.

BY Jeremy W. Keene

DATE 5/16/01

MONTANA DEPARTMENT OF TRANSPORTATION

RECEIVED:

BY Carl S. Pal May 11, 2001
PRECONSTRUCTION ENGINEER DATE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

WGM Group, Inc.

713/design/1280TITL.DGN 05/16/2001 11:12:26 AM

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MONTANA	STPX 20 (19)	2

NOTES

LAND & WATER D-J

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 ACCESS 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 SPOIL 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 (DRY) 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. 5811). 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.

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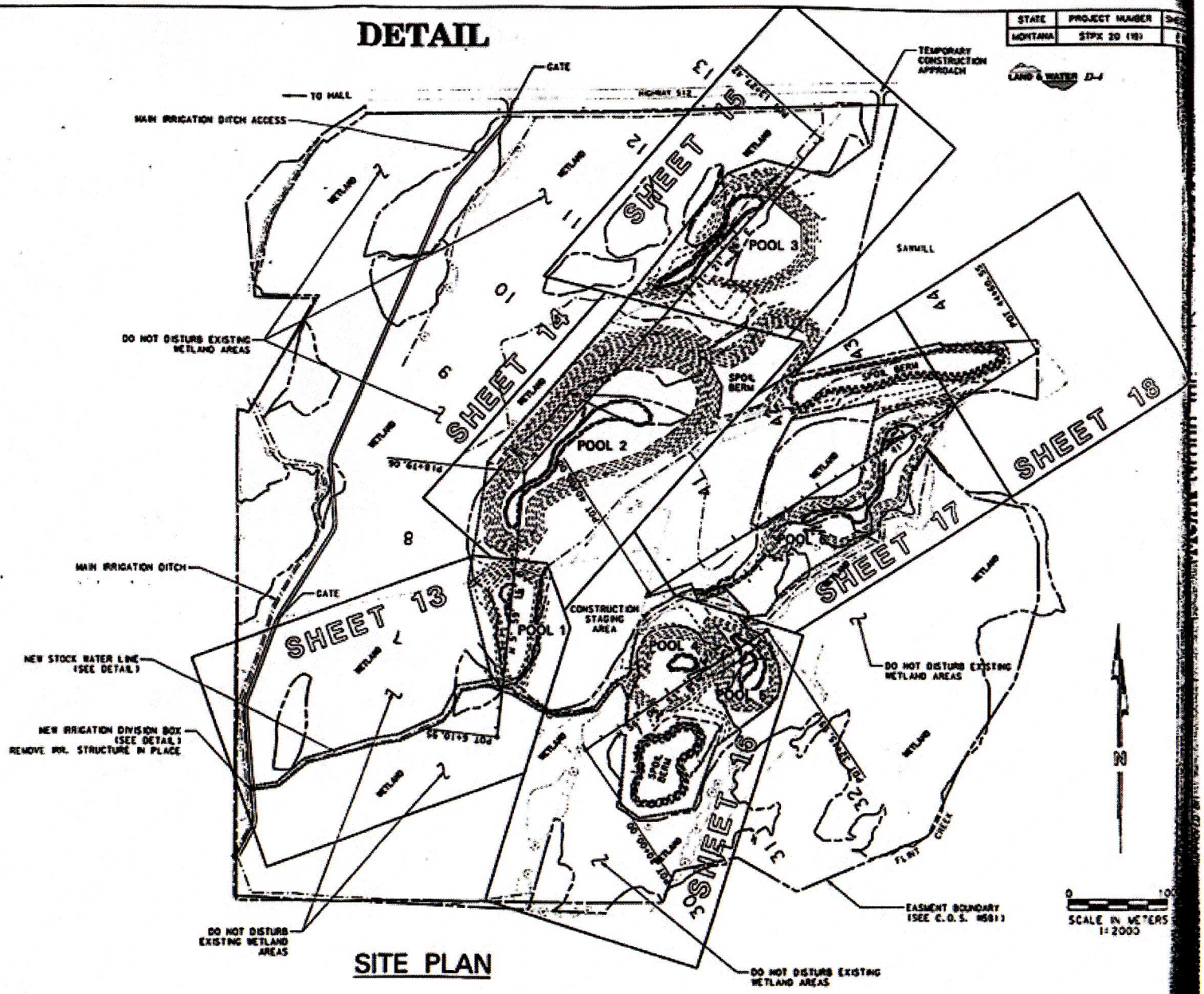
DETAIL

STATE	PROJECT NUMBER	SHEET
MONTANA	STPX 20 (19)	

LAND & WATER D-4

LEGEND

- EASEMENT BOUNDARY
- EXISTING TREES AND SHRUBS
- EXSITING 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



SITE PLAN

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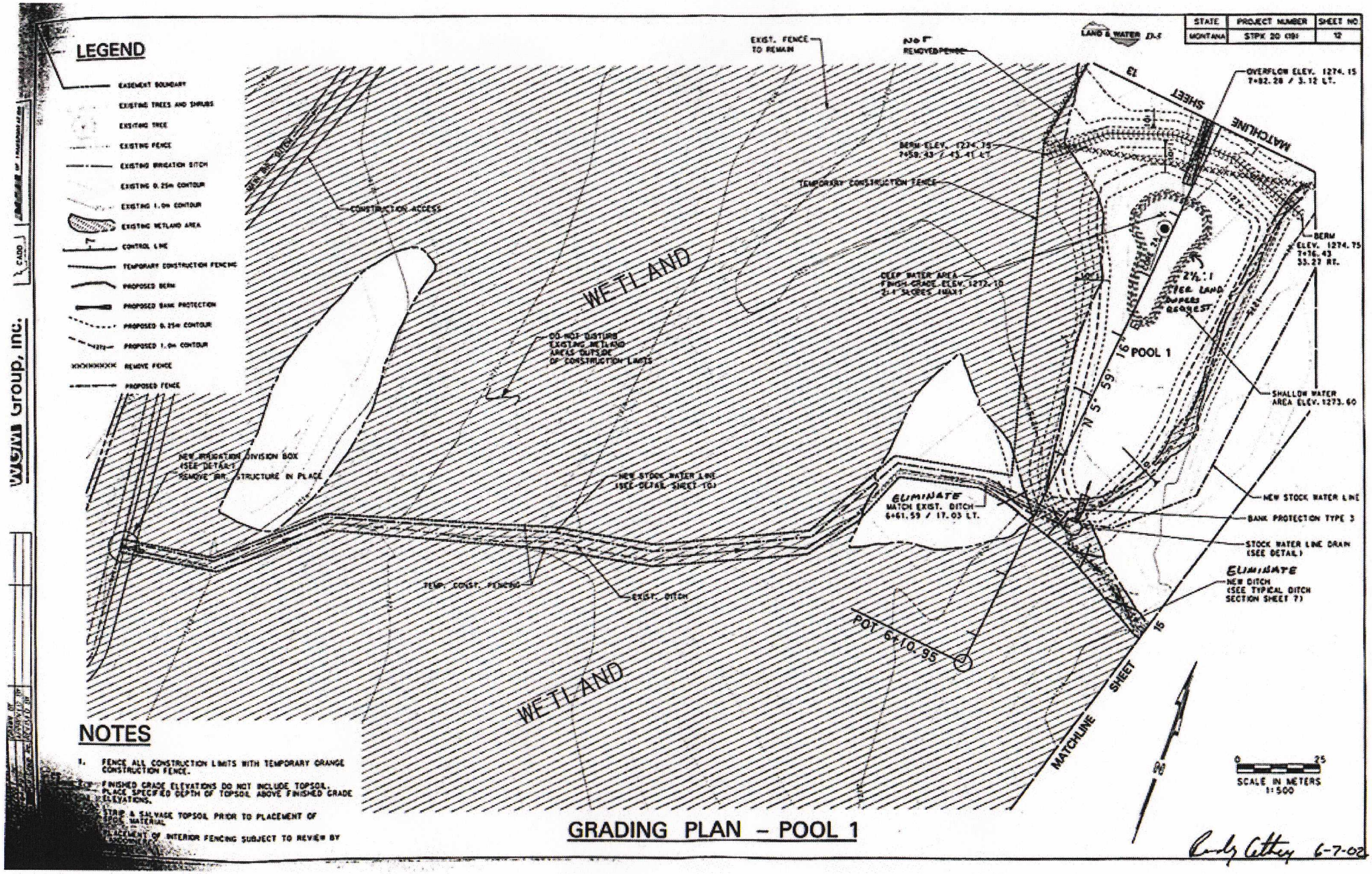
STATE
MONTANA
PROJECT NUMBER
STPK 20 (19)
SHEET NO
12
LAND & WATER D-5
LEGEND
EASEMENT BOUNDARY
EXISTING TREES AND SHRUBS
EXISTING TREE
EXISTING FENCE
EXISTING IRRIGATION DITCH
EXISTING 0.25m CONTOUR
EXISTING 1.0m CONTOUR
EXISTING WETLAND AREA
CONTROL LINE
TEMPORARY CONSTRUCTION FENCING
PROPOSED BERM
PROPOSED BANK PROTECTION
PROPOSED 0.25m CONTOUR
PROPOSED 1.0m CONTOUR
REMOVE FENCE
PROPOSED FENCE
EXIST. FENCE TO REMAIN
NOT REMOVED FENCE
OVERFLOW ELEV. 1274.15
7+82.28 / 3.12 LT.
MATCHLINE SHEET 13
BERM ELEV. 1274.75
7+59.43 / 43.41 LT.
TEMPORARY CONSTRUCTION FENCE
CONSTRUCTION ACCESS
WETLAND
DEEP WATER AREA
FINISH GRADE ELEV. 1272.10
2:1 SLOPES (MAX)
2½:1
PER LAND OWNERS REQUEST
BERM
ELEV. 1274.75
7+76.43
33.27 RT.
DO NOT DISTURB EXISTING WETLAND AREAS OUTSIDE OF CONSTRUCTION LIMITS
POOL 1
N 5° 59' 16" E
SHALLOW WATER AREA ELEV. 1273.60
NEW IRRIGATION DIVISION BOX (SEE DETAIL)
REMOVE IRR. STRUCTURE IN PLACE
NEW STOCK WATER LINE (SEE DETAIL SHEET 10)
ELIMINATE
MATCH EXIST. DITCH
6+61.59 / 17.03 LT.
NEW STOCK WATER LINE
BANK PROTECTION TYPE 3
STOCK WATER LINE DRAIN (SEE DETAIL)
ELIMINATE
NEW DITCH (SEE TYPICAL DITCH SECTION SHEET 7)
TEMP. CONST. FENCING
EXIST. DITCH
POT 6+10.95
WETLAND
MATCHLINE SHEET 15
SCALE IN METERS
1:500
NOTES
1. FENCE ALL CONSTRUCTION LIMITS WITH TEMPORARY ORANGE CONSTRUCTION FENCE.
2. FINISHED GRADE ELEVATIONS DO NOT INCLUDE TOPSOIL. PLACE SPECIFIED DEPTH OF TOPSOIL ABOVE FINISHED GRADE ELEVATIONS.
3. STRIP & SALVAGE TOPSOIL PRIOR TO PLACEMENT OF SPOIL MATERIAL
4. PLACEMENT OF INTERIOR FENCING SUBJECT TO REVIEW BY LANDOWNER
GRADING PLAN – POOL 1
Randy Cathey 6-7-02
WGM Group, Inc.