MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2002

Camp Creek
Sula, Montana

Prepared for:

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

Prepared by:

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

February 2003

Project No: 130091.039

MONTANA DEPARTMENT OF TRANSPORTATION

WETLAND MITIGATION MONITORING REPORT:

YEAR 2002

Camp Creek
Sula, Montana

Prepared for:

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

Prepared by:

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

February 2003

Project No: 130091.039

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

The Camp Creek Mitigation Site was developed to mitigate wetland impacts associated with the Montana Department of Transportation (MDT) proposed Sula-North and South project. Camp Creek is located in Ravalli County, MDT Watershed # 3, in the Lower Clark Fork region. The mitigation site is located approximately three miles south of Sula, Montana (**Figure 1**). Elevations of the site range from 4,600 ft at the north boundary to 4,730 ft at the south boundary. Turnstone Biological conducted the original wetland delineation and functional assessments for the Camp Creek proposed mitigation site in the summer of 2001.

The approximate site boundary is illustrated on **Figure 2** (**Appendix A**), and the original site plans are included in **Appendix D**. The project is located within the Sula Basin and along the historic Camp Creek floodplain. Camp Creek flows across the valley bottom, until eventually draining into East Fork of the Bitterroot River. Seasonal flooding and perennial creek flow provide the primary hydrology source within the new channel/floodplain margins. Local groundwater systems serve as a secondary hydrology source, flowing through the deep alluvial substrate contained within the Sula Basin. Several smaller creeks drain into Camp Creek, including Andrews, Praine, Waugh and Dick.

Construction at the Camp Creek Mitigating Site was completed during the spring of 2002. The overall goals of this project were the functional restoration/enhancement of 42.7 acres of wetland, enhancement of 24 acres of heavily grazed and cleared riparian vegetation, and creation and restoration of about 16.5 acres of channel bottom and floodplain margins. However, no written agreement between MDT and the Corps of Engineers regarding eventual credit allocation exists. Construction diagrams are presented in **Appendix D**. Project details for each of the three main goals are included in the following list:

Functional Restoration

- Return Camp Creek to its historic channel and establish new channel.
- Restore hydrology and vegetation, recreating high value wetland habitat along Camp Creek riparian corridor.
- Fill existing drainage ditches.

Enhancements

- Riparian shrub and tree plantings throughout the created floodplain margins.
- Drier upland species planting in areas of created upland slopes.

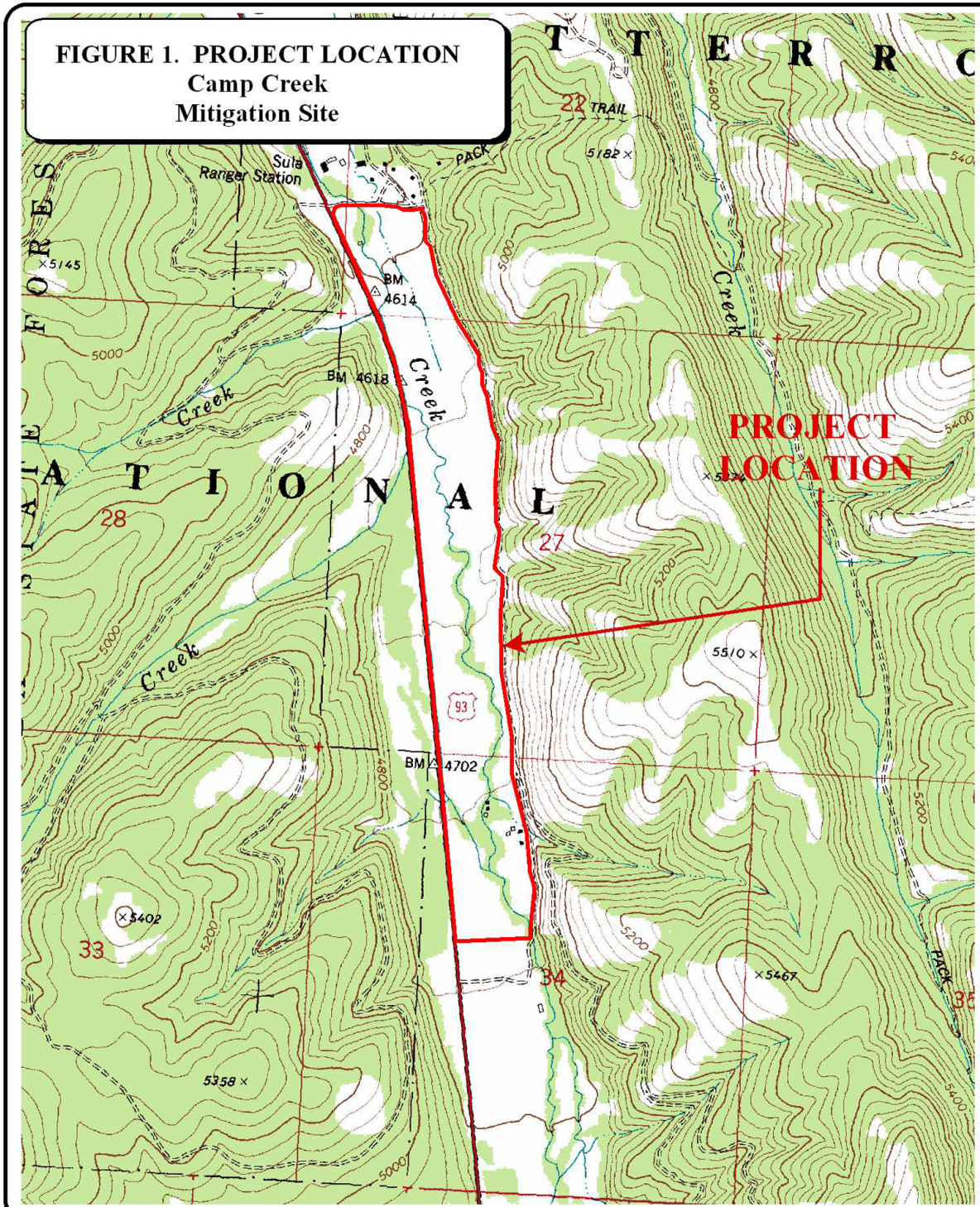
Creation

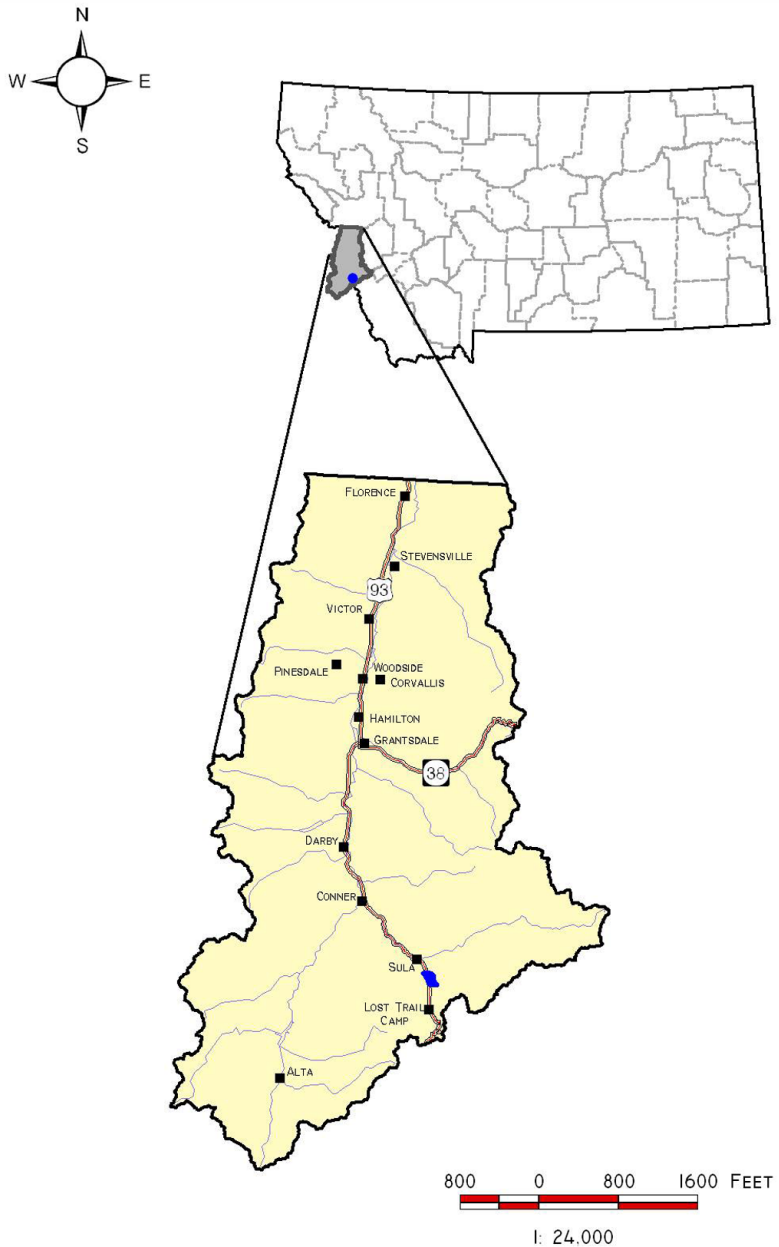
- Creation of emergent/scrub shrub wetlands along the floodplain margins of the new channel.

The site was designed to mitigate for specific wetland functions impacted by MDT roadway projects, including: storm water retention, roadway runoff filtration, sediment and nutrient retention, water quality, groundwater recharge, and wildlife habitat.

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

FIGURE 1. PROJECT LOCATION
Camp Creek
Mitigation Site





PROJECT #: 130091.038
DATE: DEC 2002
LOCATION:
PROJECT MANAGER: B. DUTTON
DRAWN BY: B. NOECKER

LAND & WATER CONSULTING, INC.
1120 CEDAR PO BOX 8254 MISSOULA, MT 59807

2.0 METHODS

2.1 Monitoring Dates and Activities

The site was visited on September 10 (mid-season) and November 21, 2002 (late season). Monitoring activities were conducted on the MDT-owned portion of the site, as well as within the fenced portion of the adjacent Grasser property. The mid-season visit was conducted to document vegetation, soil, and hydrologic conditions used to map jurisdictional wetlands. All information contained on the Wetland Mitigation Site Monitoring Form (**Appendix B**) was collected at this time. Activities and information conducted/collected included: wetland delineation; wetland/open water aquatic habitat boundary mapping; vegetation community mapping; vegetation transect; soils data; hydrology data; bird and general wildlife use; photograph points; macroinvertebrate sampling; GPS data points; functional assessment; and (non-engineering) examination of topographic features. The late-season visit was of a reconnaissance nature.

2.2 Hydrology

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

Two cross section locations were established and surveyed across Camp Creek on the MDT-owned parcel: one upstream and one downstream of the Praine Creek confluence with Camp Creek (**Figure 5, Appendix F**). The cross sections will be used to monitor potential lateral and vertical channel migration over time.

2.3 Vegetation

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

A 10-foot wide belt transect was established during the mid-season monitoring event to represent the range of current vegetation conditions. Percent cover was estimated for each vegetative species encountered within the "belt" using the following values: T (few plants); P (1-5%), 1 (5-15%); 2 (15-25%); 3 (25-35%); 4 (35-45%); 5 (45-55%) and so on to 9 (85-95). Percent cover was estimated for each vegetative species encountered. The transect location is illustrated on **Figure 2** (**Appendix A**). The transect will be used to evaluate changes over time, especially the establishment and increase of hydrophytic vegetation. The transect location was marked on the air photo and all data were recorded on the mitigation site monitoring form. Transect endpoint

locations were recorded with the GPS unit. A photo was taken from both ends of the transect looking along the transect path.
A comprehensive plant species list for the site was compiled and will be updated as new species are encountered. Ultimately, observations from past years will be compared with new data to document vegetation changes over time. Revegetation enhancements were implemented in the spring of 2002. Survival rates for planted species were recorded during the monitoring visit.

2.4 Soils

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

2.5 Wetland Delineation

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

2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations and other positive indicators of use, such as vocalizations, were recorded on the wetland monitoring form during the mid-season visit. Indirect use indicators, including tracks; scat; burrows; eggshells; skins; bones; etc., were also recorded. These observations were recorded as the observer traversed the site while conducting other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not implemented. A comprehensive species list for the entire site was compiled. Observations from past years will ultimately be compared with new data.

2.7 Birds

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

2.8 Macroinvertebrates

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

2.9 Functional Assessment

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

2.10 Photographs

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

2.11 GPS Data

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

2.12 Maintenance Needs

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

3.0 RESULTS

3.1 Hydrology

The main source of hydrology for this site is Camp Creek, a perennial flowing stream draining out of the south end of the Bitterroot Range. Seasonal flooding of Camp Creek occurs during spring runoff. A secondary source of hydrology is the persistent movement of groundwater through course alluvium materials located throughout the valley bottom. The location of this mitigation site is within the historic Camp Creek floodplain. The site consists of a newly constructed main channel, streambanks and floodplain terraces. Depressional wetlands are

present, supported by seasonal overland flooding of Camp Creek and groundwater flows. Where it enters Grasser's parcel south of the MDT-owned parcel, the creek once was diverted into a channel running along the edge of Hwy 93. Several ditches designed to drain the wetland meadow complex were filled and closed in recent construction activities. Removal of drain ditches will now allow for groundwater systems to recharge and provide possible higher storage functions. Average high water levels were recorded at 222 cfs (Turnstone Biological, 2001). Lower water flows are on average 10 cfs.

Rock bottom occurred across approximately 2.15 acres or 4% of the 49-acre mitigation site (**Figure 3**). Depths of the creek varied, ranging from 0.5 ft in the straight segments to 2 - 3 ft deep around the bends and meanders.

Cross section results are presented in **Figure 5** (**Appendix F**). These cross sections represent, in essence, post-project "baseline" conditions against which future cross section results will be compared.

3.2 Vegetation

Sixty-seven plant species were identified at the site and are listed in **Table 1**. The majority of these species are herbaceous, found in wetland meadow complexes with minor tree or shrub coverage. Several remnant shrub patches exist along dry oxbows of historic Camp Creek. With the reintroduction of hydrology into the old channels, these shrub patches are now receiving water again and should flourish over time. Several mature black cottonwood (*Populus trichocarpa*) stands are also located amongst shrub patches. Large areas of wet meadows exist within the areas of lower topography. These wet meadows are seasonally inundated and groundwater-fed.

Four wetland and two upland community types were identified and mapped at the mitigation site (**Figure 3**, **Appendix A**). The four wetland community types include Type 2: *Carex/Phalaris*, Type 3: *Alopecurus/Carex*, Type 4: *Salix/Agropyron* and Type 6: *Populus/Salix*. The two upland community types include Type 4: *Agropyron/Chenopodium* and Type 5: *Agropyron/Centaurea*. Plant species observed within each of these communities are listed on the attached data form (**Appendix B**).

Wetland types 2 & 6 were present before construction of the main channel. Pre-construction wetland delineation mapped the majority of the site as emergent wetlands. Type 2 is a remnant wetland with heavy past alterations due to livestock grazing and historic clearing of riparian vegetation. Type 2 is the wettest community and occurs as emergent wetlands in saturated to shallow water conditions. Type 6 consists of several shrubs such as willow (*Salix*), alder (*Alnus*) and birch (*Betula*), found along the old dry oxbows and depressions. Higher on the banks, just above the streambed, mature cottonwoods are present along the old terraces.

The two remaining wetland types were created during the channel reconstruction. Type 4 is found along the streambanks in areas of wrapped banks with geo-textile fabric. These streambank/fabric areas were broadcast seeded with a mix. Revegetation efforts were conducted to stabilize the fabric work and enhance riparian vegetation. Community type classification for

Type 4 is based on the dominant grass species and willow sprigging used during construction efforts. Type 3 is in the created floodplain adjacent to the main creek and beyond the fabric line. These areas have received no seeding and have become revegetated with wetland and upland species found throughout the site. Some revegetation efforts were also implemented in the floodplain margins. These included planting of 10-cubic gallon shrubs and trees. Species planted for riparian enhance included cottonwood, willows, dogwood (*Cornus stolonifera*) and aspen (*Populus tremuloides*).

Adjacent upland vegetation communities are mainly dominated by rangeland and/or aggressive weedy species. Type 4 consists of areas created for upland vegetation enhancement. These areas were planted with a mix of 5-cubic gallon plantings and weed matting. Upland plantings included Douglas fir (*Pseudotsuga menziesii*), lodgepole pine (*Pinus contorta*) ponderosa pine (*Pinus ponderosa*), serviceberry (*Amelanchier alnifolia*), shrubby potentilla (*Potentilla fruticosa*), snowberry (*Symphoricarpos albus*) and woods rose (*Rosa woodsii*). Dominant species included pasture grasses and mostly weedy disturbance species such as quackgrass (*Agropyron repens*), pennycress (*Thlaspi arvensis*), dandelion (*Taraxacum officinale*), and tumble mustard (*Sisymbrium altissimum*). During the time of monitoring, plantings did not contribute enough coverage to be considered significant in determining them as dominant in the community type.

Type 5 consists of upland areas historically grazed, dominated with pasture grasses such as quackgrass, meadow foxtail (*Alopecurus pratensis*) and smooth brome (*Bromus inermis*). Type 5 also has a high distribution of spotted knapweed (*Centaurea maculosa*), located in the transition zone between wetland bottoms and open forest slopes.

Several noxious weeds were observed throughout the Camp Creek Mitigation Site. These plants include spotted knapweed, Canada thistle (*Cirsium arvense*), and hound's-tongue (*Cynoglossum officinale*). Other weedy or non-native species include curly dock (*Rumex crispus*), common dandelion, lambsquarters (*Chenopodium album*), clasping pepper-grass (*Lepidium perfoliatum*), pennycress, tumbleweed and quackgrass.

Vegetation transect results are detailed in the attached data forms and are graphically summarized below.

Transect 1:

Start	*Type 1 – Agropyron/Chenopodium Upland (111')*	*Type 2 – Carex/Phalaris Wetland (102')*	*Type 3 – Agropyron/ Carex Upland (63')*	*Type 4 – Alopecurus/Carex Wetland (195')*	Total: 471'	End

Table 1: *2002 Camp Creek Vegetation Species List*

Scientific Name	Common Name	Region 9 (Northwest) Wetland Indicator
Achillea millefolium	Common Yarrow	FACU
Agrostis alba	Redtop	FAC+
Agropyron repens	quackgrass	FAC-
Alnus incana	Thin leaved alder	FACW
Alopecurus pratensis	Meadow foxtail	FACW
Amelanchier alnifolia	Service-berry	FACU
Bromus inermis	Smooth brome	--
Bromus tectorum	cheatgrass	--
Calamagrostis Canadensis	Bluejoint reedgrass	FACW+
Carex aquatilis	Water sedge	OBL
Carex bebbii	Bebb's sedge	OBL
Carex nebrascensis	Nebraska sedge	OBL
Carex praegracilis	Clustered field sedge	FACW
Carex utriculata	Beaked sedge	OBL
Centaurea maculosa	Spotted Knapweed	--
Cercocarpus ledifolius	Mountain-mahogany	--
Chenopodium album	White Goosefoot	FAC
Cirsium arvense	Canada Thistle	FACU+
Cornus stolonifera	Red-osier dogwood	FACW
Crataegus douglasii	Douglas Hawthorn	FAC
Crepis tectorum	Annual hawksbeard	--
Cynoglossum officinale	Hound's tongue	FACU
Danthonia spp.	Oatgrass	--
Epilobium ciliatum	hairy willow-herb	FACW+
Epilobium paniculatum	willow-herb	--
Equisetum arvense	Field horsetail	FAC
Equisetum laevigatum	Smooth scouring-rush	FACW
Glyceria elata	tall mannagrass	FACW+
Gnaphalium palustre	Cudweed	FAC+
Geum macrophyllum	Big leafed avens	OBL
Juncus balticus	Baltic rush	FACW
Juncus bufonius	toad rush	FACW
Juncus ensifolius	Three-stamen Rush	FACW
Lepidium perfoliatum	clasping pepper-grass	FACU+
Lonicera involucrate	honeysuckle	FAC+
Lupinus wyethii	Wyeth's lupine	NI
Lychnis alba	white campion	--
Matricaria matricarioides	Pineapple-weed	FACU
Melilotus officinalis	Yellow Sweet clover	FACU
Mentha arvensis	Field mint	FAC
Phalaris arundinacea	Canary Reed Grass	FACW
Phleum pretense	Timothy	FACU
Pinus ponderosa	ponderosa pine	--
Plantago major	Plantain	FACU+
Poa pratensis	Kentucky Bluegrass	FACU+
Polygonum amphibium	Water smartweed	OBL
Populus trichocarpa	Cottonwood	FAC
Populus tremuloides	Quaking aspen	FAC+
Potentilla gracilis	Northwest cinquefoil	FAC
Potentilla fruticosa	Shrubby cinquefoil	FAC-
Pseudotsuga menziesii	Douglas fir	FACU
Ranunculus repens	Buttercup	FACW
Rosa woodsii	Woods rose	FACU
Rubus idaeus	Wild raspberry	FACU
Rumex crispus	Curly Dock	FACW
Salix bebbiana	Bebb's willow	FACW
Salix drummondiana	Drummond willow	FACW
Salix geyeriana	Geyer willow	FACW+

Table 1: ***2002 Camp Creek Vegetation Species List (continued)***

Scientific Name	Common Name	Region 9 (Northwest) Wetland Indicator
Salix exigua	Sandbar Willow	OBL
Salix lutea	Yellow willow	OBL
Senecio vulgaris	Common groundsel	FACU
Sisymbrium altissimum	Tall tumble mustard	FACU-
Smilacina stellata	Starry false-Solomon's-seal	FAC-
Symphoricarpos albus	snowberry	FACU
Tanacetum vulgare	Common tansy	NI
Taraxacum officinale	Common dandelion	FACU
Thlaspi arvensis	Pennycress	NI
Trifolium pretense	Red clover	FACU
Verbascum thapsus	Common mullein	--
Veronica Americana	American speedwell	OBL

3.3 Soils

The soils located at the Camp Creek site are mapped as Gallatin-shallow muck complex, gently sloping. Soil characteristics at each wetland determination point were compared with those of the Gallatin-shallow muck complex and generally matched this classification. Wetland soils observed during monitoring and documented on the Routine Wetland Determination form were mostly peat, loams, sandy loams, or sands with very low chromas (1 or 2). Mottles or oxidized rhizospheres (redoximorphic features) were not present any of the profiles. Soil profiles in the wetlands meadow mostly consisted of deep A horizons of peat or loamy materials with a sandy/gravelly layer underneath. Several profiles had large cobbles, gravels and stones below a 6-8 inch A horizon with matrix colors of 10YR 2/1. Created upland slopes were constructed with fill materials removed from channel excavation. Upland soil pits consisted of a mixture of large cobbles and loamy soil, with matrix colors of 10YR 2/2.

3.4 Wetland Delineation

Delineated wetland boundaries are illustrated on **Figure 3**. Completed wetland delineation forms are included in **Appendix B**. Soils, vegetation, and hydrology are discussed in preceding sections. Pre-construction wetland delineation documented 63 acres of wetlands throughout the current mitigation site (Turnstone Biological, 2001), see **Figure 4** in **Appendix A**. Monitoring in 2002 identified the following conditions:

	Monitoring Area
Gross Wetland Area	50.64
Open Water Area	2.15
Upland Islands	2.11
Net Wetland Area	**46.38**

Approximately 46.38 wetland acres and 2.15 open water acres are currently within the monitoring area (**Figure 3**). The pre-construction wetland delineation reported 63.17 wetland and no open water acres. The initial net decrease in wetland acres was 46.38 – 63.17 = (-16.79) acres, while the net gain in open water (stream channel) was 2.15 acres.

An initial net decrease in wetland acres was observed at this mitigation site. The pre-project and post-project wetland delineation boundaries were significantly different along the western side of

the mitigation site on the MDT owned parcels. Several areas mapped during pre-project delineation as emergent wetlands are currently delineated as uplands. This could be attributable to the dry year, short-term construction-related disturbance (haul routes, drive-through areas, staging areas, etc.), longer-term construction-related disturbance, differences in pre- and post-construction delineation approaches, or a combination of all factors.

Final plan designs were based on a preliminary wetland delineation conducted before the "final" delineation conducted by Turnstone Biological. The preliminary wetland delineation was substantially smaller in acres than the final delineation submitted by Turnstone Biological. Consequently, some areas ultimately depicted as wetlands in the final delineation were heavily disturbed during construction efforts and were also designated as areas to deposit fill materials. However, some upland areas were not created as specified in the construction plans, but were larger or in different locations. Several areas mapped during the pre-project delineation as uplands became spoil piles two to three times larger then the original size of the mapped upland.

Thus, a combination of numerous factors likely resulted in the initial wetland "loss" observed at the site. However, 2002 was the first monitoring season following construction, and it is anticipated that the short-term effects of construction–related disturbance will be reduced over time.

3.5 Wildlife

Wildlife species, and evidence of wildlife, observed on the site during 2001 monitoring efforts are listed in **Table 2**. Specific evidence observed, as well as activity codes pertaining to birds, is provided on the completed monitoring form in **Appendix B**.

This site provides habitat for a variety of wildlife species, although this was not necessarily reflected in the 2002 monitoring data. Five mammal and two bird species were noted at the mitigation site during the 2002 site visits. Moose frequent the site, were observed by local contractors on several occasions, and are thought to be responsible for much of the observed damage to planted shrubs.

Table 2: ***Wildlife Species Observed at the Camp Creek Mitigation Site***

FISH None (fish surveys not conducted)	
AMPHIBIANS None	
REPTILES None	
BIRDS American Crow (*Corvus brachyrhynchos*) Red-tail Hawk (*Buteo jamaicensis*)	
MAMMALS Coyote (*Canis latrans*) Deer (*Odocoileus sp.*) Bobcat (*Felis rufus*)	Elk (*Cervus elaphus*) Moose (*Alces alces*)

3.6 Macroinvertebrates

Complete results from the macroinvertebrate sampling locations (**Figure 2**) are presented in **Appendix B.** Sampling points were located along several different areas of the creek. The assemblage collected at this site was unlike any other in this study; the fauna present was characteristic of a cold-water foothill or montane stream with cobble substrate. The bioassessment method developed for montane streams of Western Montana (Bollman 1998) produced a score that suggested slight impairment of biotic integrity at this site. Impairment was likely due to deposited sediment, since the number of caddis fly taxa was lower than expected. Water quality appeared to be within expected limits for a montane stream, since the biotic index value (3.78) was low, and the site supported no fewer than 6 mayfly taxa. The presence of the turbellarian *Dugesia* sp. suggested that groundwater inputs influence stream flow at the sampled site.

3.7 Functional Assessment

Completed functional assessment forms are included in **Appendix B**. The two assessment areas evaluated for Camp Creek both rated as Category II (high value) and Category III (moderate value) sites. Assessment areas were separated into the new channel/floodplain and emergent wetland not disturbed by construction. Category II ratings for the new channel/floodplain were primarily due to moderate ratings for wildlife/fish habitat, flood attenuation, and sediment/nutrient removal, and a high rating for production export / food chain support. Other factors contributing to this score were low to moderate ratings for sediment/shoreline stabilization, uniqueness, and recreation/education ratings.

The area received a moderate rating for T&E species habitat, and high ratings for MNHP species habitat (suspected primary habitat for Westslope cutthroat trout [*Oncorhynchus clarki lewisi*] based on "abundant" occurrence assigned in project area reach by the Montana Fisheries Information System [2002]), surface water storage, production export/food chain support and groundwater discharge/recharge. The variable for T&E species habitat rated moderate due to documented secondary bull trout (*Salvelinus confluentus*) habitat in the project area Camp Creek reach in approximately 1985 (MFISH 2002). The surface water storage variable rated high due to the acre-feet of water contained within the floodplain during seasonal flooding. The site received a low sediment/shoreline stabilization rating due to the lack of species with deep binding roots along the streambank. Shoreline species during evaluation consisted mostly of wheatgrass and willow sprigs, at this current cover value these species were not observed to have substantial deep binding roots. Over time, willow sprigs should develop into larger, more robust shrubs with extensive deep binding roots systems. Enhancement of both wetland and upland vegetation should increase wildlife usage throughout the site.

Category III ratings for emergent wetlands were primarily due to moderate ratings for T&E species habitat, flood attenuation, surface water storage and production export/food chain support. Other factors contributing to this score were low to moderate ratings for wildlife/fish habitat, MNHP species habitat, sediment/shoreline stabilization, uniqueness and recreation/education ratings. The site received a high rating for sediment/nutrient removal and groundwater discharge/recharge. The variable for sediment/nutrient removal rated high due to

the high vegetation cover in the emergent wetlands, seasonal flooding of the area and restricted nature of the outlet. The site had no fish rating due to the general habitat deficiencies. The site received a moderate surface water storage rating due to the amount of acre-feet water contained within the floodplain and the frequency of flooding.

Pre-project and post-project wetland assessment scores are presented in **Table 3**. Turnstone Biological conducted the initial wetland delineation and functional assessments for the Camp Creek Mitigation Site. Category ratings remained the same between the different assessments. Individual scores were higher during post-project evaluation than with the initial evaluation completed during 2001. Turnstone Biological separated the site into three assessment areas: emergent, scrub-shrub emergent and rock bottom wetland classifications. During the 2002 evaluations, two of these areas were grouped into one assessment area; the scrub-shrub emergent and rock bottom types formed the channel/floodplain assessment area.

Table 3: ***Summary of Baseline 2001 and 2002 Wetland Function/Value Ratings and Functional Points*** [1] ***at the Camp Creek Mitigation Project***

Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	2001 Type I (Turnstone)	2001 Type II (Turnstone)	2001 Type III (Turnstone)	2002 Channel & Floodplain (LWC)	2002 Emergent Wetlands (LWC)
Listed/Proposed T&E Species Habitat	Mod (0.8)	Mod (0.8)	Mod (0.8)	Mod (0.8)	Mod (0.8)
MNHP Species Habitat	Low (0.1)	Low (0.1)	Low (0.1)	High (0.8)	Low (0.1)
General Wildlife Habitat	Low (0.3)	Mod (0.5)	Mod (0.5)	Mod (0.7)	Mod (0.5)
General Fish/Aquatic Habitat	Low (0.1)	Low (0.1)	Mod (0.5)	Mod (0.7)	NA
Flood Attenuation	Mod (0.6)	Mod (0.5)	Mod (0.4)	Mod (0.5)	Mod (0.6)
Short and Long Term Surface Water Storage	Low (0.3)	Low (0.3)	High (0.8)	High (1.0)	Mod (0.6)
Sediment, Nutrient, Toxicant Removal	Mod (0.7)	Mod (0.7)	Mod (0.6)	Mod (0.6)	High (1.0)
Sediment/Shoreline Stabilization	Low (0.2)	Mod (0.6)	Low (0.3)	Low (0.3)	NA
Production Export/Food Chain Support	Mod (0.7)	Mod (0.7)	High (0.9)	High (1.0)	Mod (0.7)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.1)	Low (0.3)	Low (0.2)	Mod (0.4)	Low (0.3)
Recreation/Education Potential	Low (0.2)	Low (0.3)	Low (0.1)	Mod (0.5)	Mod (052)
Actual Points/Possible Points	5.1/12	5.9/12	6.2/12	8.3/12	6.1/10
% of Possible Score Achieved	42%	49%	52%	69%	61%
Overall Category	III	III	III	II	III
Total Acreage of Assessed Wetlands and Open Water within Easement	57.72 ac	1.59 ac	3.86 ac	19	30
Functional Units (acreage x actual points)	294.37 fu	9.38 fu	24.70 fu	157.7 fu	183 fu
Net Acreage Gain	NA	NA	NA	0 ac	0 ac
Total Functional Units At Site	328.45			340.7	
Total Functional Unit "Increase"	Approximately 12.25				

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

Post-project assessments for the channel/floodplain area resulted in higher scores for several of the parameters. Pre-project assessment Type III was considered the most similar to the new channel/floodplain areas and was used for comparison. Comparing these two assessments areas, Land & Water observed higher ratings in MNHP species habitat, wildlife habitat, fish/aquatic habitat, flood attenuation, surface water storage, production export/food chain support, uniqueness, and recreation / education potential.

Pre-project assessment area Type I (see **Table 3**) was considered similar to the post-project emergent wetland evaluated during 2002. Post-project assessment scored higher, with increases in scores for wildlife habitat, surface water storage, sediment/nutrient/toxicant removal, uniqueness, and recreation/education potential.

Based on functional assessment results (**Table 3)**, approximately 12.25 functional units have been created thus far at the Camp Creek mitigation site. The overall wetland acres decreased between pre-project and post-project assessments. However, even with the decrease in acres, the overall functional units scores slightly increased.

3.8 Photographs

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

3.9 Revegetation

Upon completion of the new channel and floodplain construction, revegetation efforts were conducted to enhance riparian and upland habitat. The streambanks were seeded with a grass mix designed by an MDT botanist and 20,480 willow cuttings were sprigged through the fabric work. Floodplain areas were planted with a mixture of native shrubs & trees associated with local riparian corridors. These included aspen, alder, black cottonwood, dogwood and willows. Upland slopes were planted with Douglas fir, lodgepole pine, ponderosa pine, serviceberry, shrubby potentilla, snowberry, and woods rose.

Species survival data is presented in **Appendix B**. The belt transect used for vegetation monitoring was also used as the survival transect. A second survival transect was added to the south of the vegetation transect across the created and planted upland berms. In general, all the species were alive except for a few shrubby potentilla and willow sprigs. Shrubby potentilla had a survival rate of approximately 86% and willow sprigs had a 73% survival rate. During the second monitoring year, a more detailed survival analysis will be conducted. Heavy wildlife grazing was observed on the site. Several shrubs and trees planted in the riparian corridor were extensively browsed and have been rubbed against enough to damaging the main stem. Additionally, several cottonwoods and aspen were pulled completely out of the ground. Planting specifications are presented in **Appendix F**.

3.10 Maintenance Needs/Recommendations

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

Survival of plantings will continue to be monitored, and supplemental planting may need to be implemented if success of current plantings is low. During the late season visit, many of the

larger 5-gallon plantings were seriously degraded due to heavy browsing by local wildlife. In some instances, whole shrubs and trees were pulled from the ground.

3.11 Current Credit Summary

As of 2002, approximately 46.38 acres of wetland and 2.15 acres of open water (new stream channel) occur on the MDT parcel and within the fenced portion of the Grasser parcel. This represents an approximate initial decrease of 16.79 wetland acres and an increase of 2.15 open water (stream channel) acres. Functional units have increased from 328.45 (pre-construction) to 340.7 (post-construction), an overall increase in 12.25 functional points. A method of credit allocation for this site was not worked out between MDT and COE prior to construction. As such, the current amount of credit applicable to this site is unknown. A method for credit determination will be developed by MDT in consultation with the COE as monitoring continues.

4.0 REFERENCES

Carlson, J. Program Zoologist, Montana Natural Heritage Program. Helena, MT. April 2001 conversation.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual.* US Army Corps of Engineers. Washington, DC.

Hackley, Pam. 1997. Pre-Project Wetland Delineation – Beaverhead Gateway Wetland Mitigation Site. Helena, MT.

Ralph, C.J., Geupel, G.R., Pyle, P., Martin, T.E., and D.F. DeSante. 1993. *Handbook of field methods for monitoring landbirds*. Gen. Tech. Rep. PSW-GTR-144. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Dept. of Agriculture. 41 p.

Urban, L. Wetland Mitigation Specialist, Montana Department of Transportation. Helena, MT. March 2001 meeting; January 2002 meeting.

U.S. Army Corps of Engineers. 2001. December 6, 2001 letter from Allan Steinle to Jeff Stutzman (Musgrave Lake Ranch LLC) regarding Milk River Wetland Mitigation Project – Corps File # 2000-90-331. Helena, MT.

USDA Natural Resource Conservation Service. 1989. *Soil Survey of Madison County Area, Montana.*

USDA Natural Resources Conservation Service. 1998. *Field Indicators of Hydric Soils in the United States*, Version 4. G. Hurt, P. Whited and R. Pringle (eds.). USDA, NRCS Fort Worth, TX.

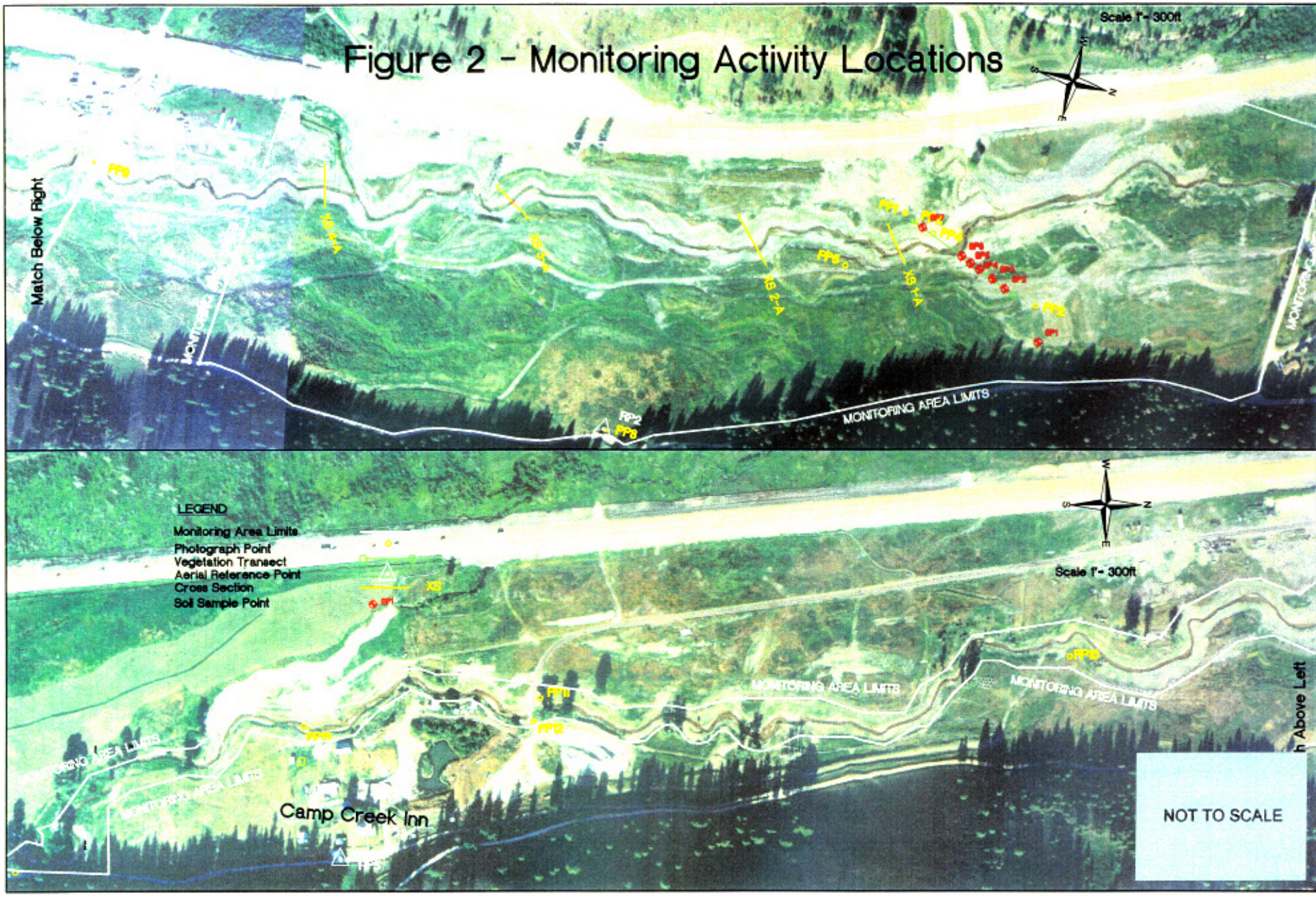
Appendix A

FIGURES 2, 3, AND 4

MDT Wetland Mitigation Monitoring
Camp Creek
Sula, Montana

LAND & WATER

Figure 2 - Monitoring Activity Locations



PROJECT NAME: MDT Camp Creek Wetland Mitigation
DRAWING TITLE: Monitoring Activity Locations

PROJ NO.	130091
FILE NAME:	TASK08BASE
SCALE:	1"=300ft
LOCATION:	Sula, Mt.
DRAWN:	R.A.
CHECKED:	B.D.
APPVD:	B.D.
PROJ MGR:	B.Dutton

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

FIGURE F2

REV -

DATE: 9-10-02

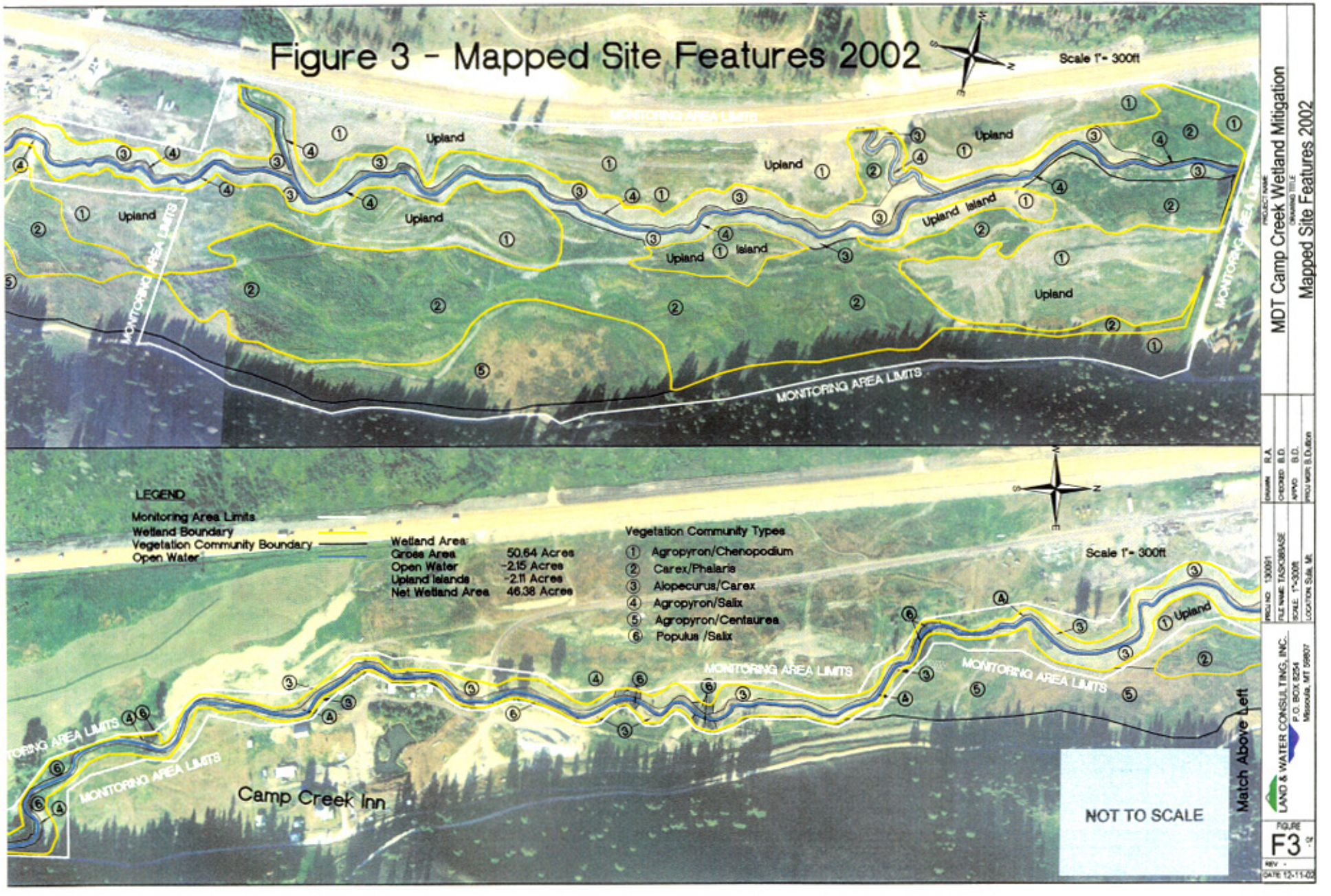
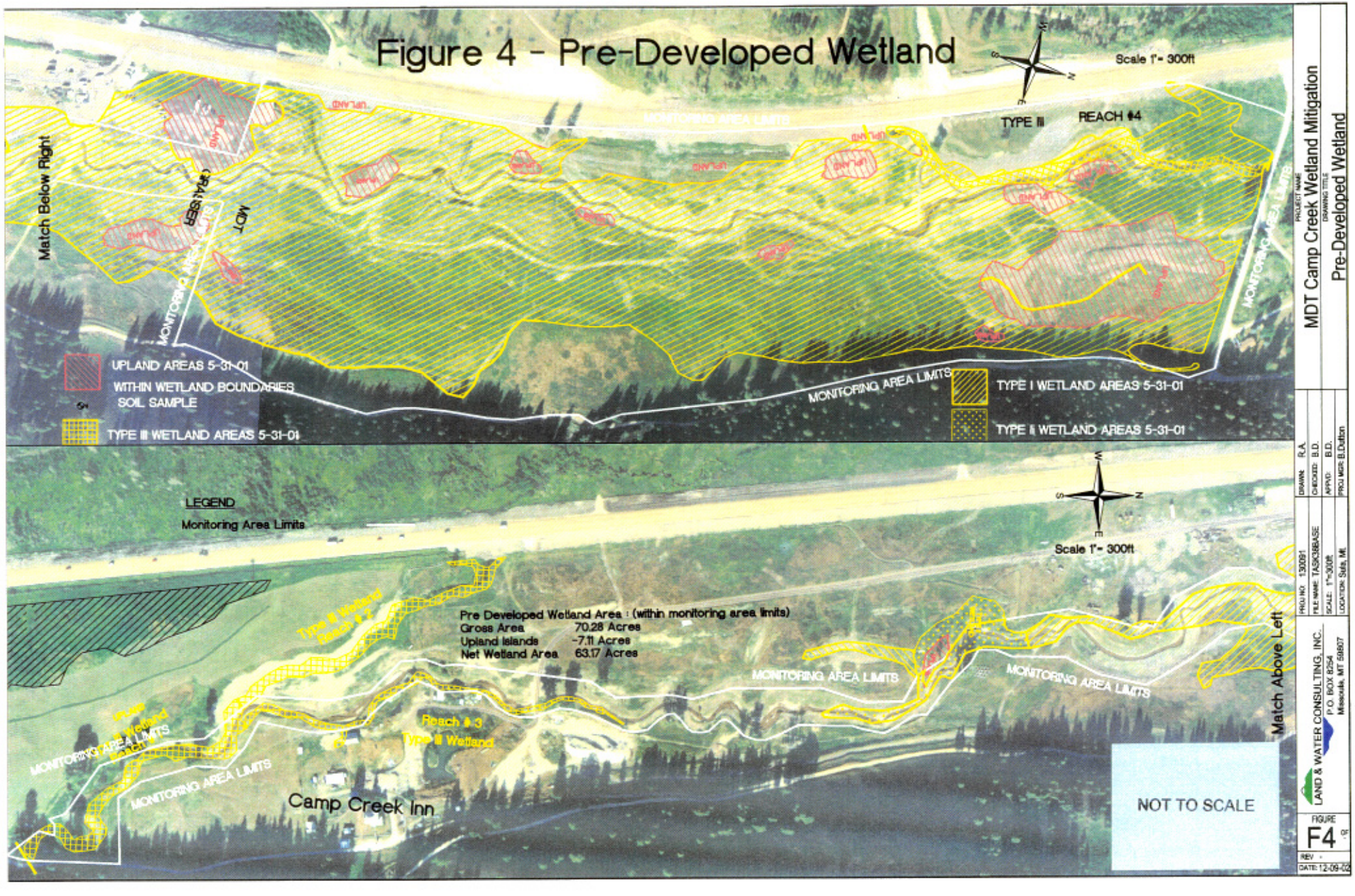


Figure 3 - Mapped Site Features 2002
Scale 1"= 300ft
MONITORING AREA LIMITS
Upland
Upland Island
Island
LEGEND
Monitoring Area Limits
Wetland Boundary
Vegetation Community Boundary
Open Water
Wetland Area:
Gross Area 50.64 Acres
Open Water -2.15 Acres
Upland Islands -2.11 Acres
Net Wetland Area 46.38 Acres
Vegetation Community Types
1 Agropyron/Chenopodium
2 Carex/Phalaris
3 Alopecurus/Carex
4 Agropyron/Salix
5 Agropyron/Centaurea
6 Populus /Salix
Camp Creek Inn
NOT TO SCALE
Match Above Left
MDT Camp Creek Wetland Mitigation
Mapped Site Features 2002
LAND & WATER CONSULTING, INC.
P.O. BOX 8254
Missoula, MT 59807
FIGURE
F3
DATE 12-11-02

Figure 4 - Pre-Developed Wetland



PROJECT NAME: MDT Camp Creek Wetland Mitigation
DRAWING TITLE: Pre-Developed Wetland

DRAWN: R.A.
CHECKED: B.D.
APPVD: B.D.
PROJ MGR: B.Dutton

PROJ NO: 130091
FILE NAME: TASK08BASE
SCALE: 1"=300ft
LOCATION: Stats, MT

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

FIGURE F4.dgn

REV -
DATE: 12-09-02

Appendix B

COMPLETED 2002 WETLAND MITIGATION SITE MONITORING FORM
COMPLETED 2002 BIRD SURVEY FORM
COMPLETED 2002 WETLAND DELINEATION FORMS
COMPLETED 2002 FUNCTIONAL ASSESSMENT FORM
MACROINVERTEBRATE SAMPLE ANALYSES

MDT Wetland Mitigation Monitoring
Camp Creek
Sula, Montana

LAND & WATER

LWC / MDT WETLAND MITIGATION SITE MONITORING FORM

Project Name: Camp Creek Project Number: 130091.039 Assessment Date: 09/05/02
Location: Sula Valley MDT District: Lower Clark Fork Milepost: _____
Legal description: T 1 N R 19 W Section 27 & 34 Time of Day: Morning to early afternoon
Weather Conditions: Cloudy & overcast Person(s) conducting the assessment: Greg Howard
Initial Evaluation Date: 09/05/02 Visit #: 1 Monitoring Year: 2002
Size of evaluation area: 200 acres Land use surrounding wetland: Agriculture; livestock grazing & pasture

HYDROLOGY

Surface Water Source: Camp Creek
Inundation**:** Present____ Absent X Average depths: _-__ft Range of depths:____-____ft
Assessment area under inundation:____%
Depth at emergent vegetation-open water boundary:____ft
If assessment area is not inundated are the soils saturated w/in 12" of surface**:** Yes X No
Other evidence of hydrology on site (drift lines, erosion, stained vegetation etc.): Hydrology on this site comes from Camp Creek. Surface and groundwater flows in areas of lower topography, observed in undisturbed wetland meadows.

Groundwater
Monitoring wells: Present _____ Absent: X
Record depth of water below ground surface

Well #	Depth	Well #	Depth	Well #	Depth

Additional Activities Checklist:
__X__Map emergent vegetation-open water boundary on air photo
__X__Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining etc.)
_____GPS survey groundwater monitoring wells locations if present

COMMENTS/PROBLEMS: Restored Camp Creek, main channel with areas of fabric work failing. Loss of fill materials used to hold fabric in place. Fabric placed along stream banks is loose, being held in place by willow sprigs and seeded grass mix. Floodplain and upland restoration/enhancement areas planted w/ large containerized plantings. Toward eastern side of project, lower and northern half, historic wetlands exist. Historic oxbows and remnant channels of Camp Creek are present, evidence of past surface flows through these areas.

VEGETATION COMMUNITIES

Community No.: 1 Community Title (main species): Agropyron/Chenopodium (Created upland)

Dominant Species	% Cover	Dominant Species	% Cover
Agropyron repens	6	Planted Species	2
Thlaspi arvensis	P	*Trifolium pratense*	1
Rumex crispus	P		
Lychnis alba	P		
Chenopodium album	1		

COMMENTS/PROBLEMS: Created uplands, planted with several drier species: Pinus ponderosa, Pseudotsuga menziesii, Symphoricarpos albus, Rosa woodsii, Potentilla fruticosa, and Amelanchier alnifolia. Browse protection needs to be removed. Wed mats are marginal, grasses still growing outside and through middle silt.

Community No.: 2 Community Title (main species): Carex/Phalaris (Undisturbed wetland)

Dominant Species	% Cover	Dominant Species	% Cover
Carex aquatilis	P	*Alopecurus pratensis*	P
Phalaris arundinacea	2	*Phleum pratense*	P
Carex utriculata	2	*Agrostis alba*	P
Carex nebrascensis	5		
Geum macrophyllum	1		

COMMENTS/PROBLEMS: Open wetland meadow with extensive sedges, intermixed with a few drier grass species. Historic oxbows and depressions still present, evidence of surface flow.

Community No.: 3 Community Title (main species): Alopecurus/Carex (Floodplain)

Dominant Species	% Cover	Dominant Species	% Cover
Alopecurus pratensis	4	*Carex nebrascensis*	1
Populus trichocarpa - Planted	P	*Phalaris arundinacea*	1
Populus tremuloides - Planted	P		
Epilobium ciliatum	P	All Plantings	1

COMMENTS/PROBLEMS: Grass coverage is heavy along streambank edges, custom designed seed mix applied during construction. Beyond fabric line this vegetation community has lower coverage & with different species composition. Natural regeneration of vegetation with species found throughout the undisturbed areas of the site. Remnant seed bank in fill and excavated materials, possible source for new coverage. 10 gallon containerized shrubs and trees were planted throughout the floodplain margin

Additional Activities Checklist:

X Record and map vegetative communities on air photo

VEGETATION COMMUNITIES (continued)

Community No.: 4 Community Title (main species): Salix/Agropyron (Streambank)

Dominant Species	% Cover	Dominant Species	% Cover
Salix - sprigged	1		
Seeded grass mix	4		

COMMENTS/PROBLEMS: Reconstructed streambank along main creek with extensive geo-textile blanket work, vegetation consisting of seeded grass mix & willow sprigs. Streambank lined with willow cutting and distinct seed mix growing from under the fabric.

Community No.: 5 Community Title (main species): Agropyron/Centaurea

Dominant Species	% Cover	Dominant Species	% Cover
Centaurea maculosa	4	*Agropyron repens*	2
Sisymbrium altissimum	P		
Bromus inermis	3		
Bromus tectorum	1		
Alopecurus pratensis	P		

COMMENTS/PROBLEMS: Upland slopes observed on the east side of site. Slopes dropping down from the tree line, into lower wetland basin and floodplain. Area dominated by spotted knapweed and several other pasture grasses such as smooth brome and quackgrass.

Community No.: 6 Community Title (main species): Populus/Salix

Dominant Species	% Cover	Dominant Species	% Cover
Populus trichocarpa	3	*Rosa woodsii*	1
Salix bebbiana	P	*Symphoricarpos albus*	P
Alnus incana	P	*Salix drummondiana*	P
Salix geyeriana	1	*Salix exigua*	P
Cornus stolonifera	T		

COMMENTS/PROBLEMS: Mature cottonwood and shrub communities found along the old channel.

COMPREHENSIVE VEGETATION LIST

Species	Vegetation Community Number(s)	Species	Vegetation Community Number(s)
Achillea millefolium	1,5	*Lupinus wyethii*	1
Agropyron repens	1,3,5	*Lychnis alba*	1
Agrostis alba	2,3	*Matricaria matricarioides*	1
Alnus incana	6	*Melilotus officinalis*	1,5
Alopecurus pratensis	2,3,5	*Mentha arvensis*	2,3
Amelanchier alnifolia	1	*Phalaris arundinacea*	2,3
Bromus inermis	5	*Phleum pratense*	2,3
Bromus tectorum	1,5	*Pinus ponderosa*	1
Calamagrostis canadensis	2	*Plantago major*	1,3
Carex aquatilis	2	*Poa pratensis*	1,5
Carex bebbii	2	*Polygonum amphibium*	2
Carex nebrascensis	2,3	*Populus tremuloides*	3,4
Carex praegracilis	2	*Populus trichocarpa*	3,6
Carex utriculata	2	*Potentilla fruticosa*	1
Centaurea maculosa	1,5	*Potentilla gracilis*	1
Cercocarpus ledifolius	1	*Ranunculus repens*	2
Chenopodium album	1,3	*Rosa woodsii*	1,6
Cirsium arvense	1	*Rubus idaeus*	6
Cornus stolonifera	3,6	*Rumex crispus*	1,2,3
Crataegus douglasii	1	*Salix bebbiana*	6
Crepis tectorum	1	*Salix drummondiana*	4
Cynoglossum officinale	1	*Salix exigua*	2,3,4
Danthonia spp.	1	*Salix geyeriana*	4,6
Epilobium ciliatum	2,3	*Salix lutea*	3
Epilobium paniculatum	2,3	*Senecio vulgaris*	1
Equisetum arvense	2,3	*Sisymbrium altissimum*	1,5
Equisetum laevigatum	2,3	*Smilacina stellata*	2
Geum macrophyllum	2,3	*Symphoricarpos albus*	1,5
Glyceria elata	2	*Tanacetum vulgare*	2,3
Gnaphalium palustre	1	*Taraxacum officinale*	1,2,3,4,5
Juncus balticus	2	*Thlaspi arvensis*	1,3,5
Juncus bufonius	2,3	*Trifolium pratense*	1
Juncus ensifolius	2,3	*Verbascum thapsus*	1,3,5
Lepidium perfoliatum	1	*Veronica americana*	2
Lonicera involucrata	6		

COMMENTS/PROBLEMS: _____

_____

_____

_____

_____

PLANTED WOODY VEGETATION SURVIVAL

Species	Number Originally Planted	Number Observed	Mortality Causes
Rosa woodsii	3	3	
Pinus ponderosa	5	5	
Pseudotsuga menziesii	3	3	
Symphoricarpos albus	3	3	
Potentilla fruticosa	15	13	
Populus trichocarpa	7	7	
Populus tremuloides	3	3	
Salix lutea	1	1	
Willow sprigs	15	11	

COMMENTS/PROBLEMS: Two transect were used to assess overall survival. Transect 1 was located along the same line as the vegetation monitoring transect, using the same belt width. The transect no. 2, starts at the beginning of transect no. 1, run towards the east (45^{o}), approximately 165 ft long. Transect no. 2 bisects an area of created uplands and associated drier species plantings. Plantings were counted and tallied for either being dead or alive. Current survival rates high, only several dead plants observed within belt transects.

WILDLIFE

BIRDS

(Attach Bird Survey Field Forms)

Were man made nesting structures installed? Yes___ No X Type:_____ How many?_____ Are the nesting structures being utilized? Yes____ No____ Do the nesting structures need repairs? Yes____ No____

MAMMALS AND HERPTILES

Species	Number Observed	Indirect indication of use			
		Tracks	Scat	Burrows	Other
Deer		X	X		
Elk		X	X		
Bobcat		X			
Moose		X			X
Coyote		X	X		

Additional Activities Checklist:
X Macro invertebrate sampling (if required)

COMMENTS/PROBLEMS: Several macro invertebrate samples taken along the main creek.

PHOTOGRAPHS

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

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

Location	Frame #	Photograph Description	Compass Reading
1	R1 16	Looking north at transect end.	0°
1	R1 17	Looking south, uplands w/plantings.	180°
1	R1 18	Looking west, Hwy 93 and created uplands.	270°
1	R1 19	Looking northwest, upland and floodplain.	315°
2	R1 20	Looking southwest at start of vegetation transect.	225°
3	R1 21-22	Looking north along transect line.	0°
4	R1 23	Looking northwest, downstream along channel.	315°
4	R1 24	Looking south, upstream along channel.	180°
4	R1 25	Looking north, curve in creek, fabric failure.	0°
5	R1 26-31	Looking south to north, panoramic of channel & floodplain.	180° – 0°
6	R1 32	Looking east along survival transect.	45°
7	R1 34-35	Looking south, lower section, creek leaving MDT parcel.	180°
8	R2 1-5	Looking east, panoramic from west side.	180° – 0°
9	R2 6-8	Looking north, main channel entering culvert.	270° – 0°
9	R2 9-12	Looking south, main channel entering culvert.	135° – 225°
10	R2 13-14	Looking south, channel and floodplain.	180° – 225°
10	R2 15	Looking north, channel and floodplain.	0°
11	R2 16-19	Looking north, channel and floodplain, upper culvert.	0° – 315°
12	R2 20	Looking south, channel and floodplain, Grasser parcel.	180° – 225°
13	R2 21	Looking south, channel & floodplain.	180°
14	R2 22	Looking north, creek entering Grasser parcel.	225°

COMMENTS/PROBLEMS:

GPS SURVEYING

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

Checklist:

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

COMMENTS/PROBLEMS: _____

WETLAND DELINEATION

(Attach Corps of Engineers delineation forms)

At each site conduct the items on the checklist below:
_X_ Delineate wetlands according to the 1987 Army Corps manual.
_X_ Delineate wetland-upland boundary on the air photo
____ Survey wetland-upland boundary with a resource grade GPS survey

COMMENTS/PROBLEMS: _____

FUNCTIONAL ASSESSMENT

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

COMMENTS/PROBLEMS: _____

MAINTENANCE

Were man-made nesting structures installed at this site? YES___ NO_X_
If yes, do they need to be repaired? YES____ NO____
If yes, describe problems below and indicate if any actions were taken to remedy the problems.

Were man-made structures build or installed to impound water or control water flow into or out of the wetland? YES_X_ NO____
If yes, are the structures working properly and in good working order? YES____ NO___
If no, describe the problems below.

COMMENTS/PROBLEMS: _____

MDT WETLAND MONITORING – VEGETATION TRANSECT

Site: Camp Creek Date: 09/05/02 Examiner: Greg Howard Transect # 1

Approx. transect length: 471 ft Compass Direction from Start (Upland): 225°

Vegetation type 1:	Upland	
Length of transect in this type:	111	feet
Species:		Cover:
Agropyron repens		6
Thlaspi arvensis		P
Potentilla fruticosa		1
Chenopodium album		P
Cirsium arvense		T
Trifolium pratense		P
Matricaria matricarioides		T
Rumex crispus		T
Epilobium ciliatum		T
Centaurea maculosa		T
Lychnis alba		P
	Total Vegetative Cover:	75%

Vegetation type 2:	Emergent wetland	
Length of transect in this type:	102	feet
Species:		Cover:
Carex nebrascensis		7
Carex utriculata		1
Phalaris arundinacea		P
Geum macrophyllum		T
Cirsium arvense		T
Epilobium ciliatum		P
Thlaspi arvensis		T
Salix exigua		P
Sisymbrium altissimum		T
Mentha arvensis		T
	Total Vegetative Cover:	90%

Vegetation type 3:	Upland	
Length of transect in this type:	63	feet
Species:		Cover:
Carex nebrascensis		1
Thlaspi arvensis		T
Epilobium ciliatum		P
Agropyron repens		3
Festuca pratensis		P
Phalaris arundinacea		T
Trifolium pratense		P
Lactuca serriola		T
Centaurea maculosa		T
Verbascum thapsus		T
Plantago major		T
	Total Vegetative Cover:	50%

Vegetation type 4:	Streambank, creek & floodplain	
Length of transect in this type:	195	feet
Species:		Cover:
Carex utriculata		T
Epilobium ciliatum		P
Juncus bufonius		T
Agropyron repens		T
Alopecurus pratensis		1
Juncus ensifolius		T
Trifolium pratense		1
Carex nebrascensis		1
Populus trichocarpa		1
Populus tremuloides		P
Willow Sprigs (SALDRU?)		P
	Total Vegetative Cover:	50%

LAND & WATER

MDT WETLAND MONITORING – VEGETATION TRANSECT (back of form)

Cover Estimate

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

Indicator Class:

+ = Obligate
- = Facultative/Wet
0 = Facultative

Source:

P = Planted
V = Volunteer

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

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

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

Notes:

BIRD SURVEY – FIELD DATA SHEET

Page__1_of_1__
Date: 9/5/02
Survey Time: 0800-1200

SITE: Camp Creek

Bird Species	#	Behavior	Habitat	Bird Species	#	Behavior	Habitat
American Crow	1	FO	-				
Red-tail Hawk	1	FO	-				

Notes:

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

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

LAND & WATER

DATA FORM

ROUTINE WETLAND DETERMINATION

(1987 COE Wetlands Delineation Manual)

Project/Site:	Camp Creek	Date:	09/05/02
Applicant/Owner:	MDT/Grasser	County:	Ravalli
Investigator:	Greg Howard	State:	MT

Do Normal Circumstances exist on the site:	x	Yes		No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?		Yes		No	Transect ID:	1
Is the area a potential Problem Area?:		Yes		No	Plot ID:	1
(If needed, explain on reverse.)						

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Agropyron repens*	H	FAC-	9			
2	*Thlaspi arvensis*	H	--	10			
3	*Cirsium arvense*	H	FACU+	11			
4	*Chenopodium album*	H	FAC	12			
5	*Trifolium pratense*	H	FACU	13			
6	*Centaurea maculosa*	H	--	14			
7	*Carex nebrascensis*	H	OBL	15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 1/7 = 14%

Area dominated by upland vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):

- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

- Depth of Surface Water: - (in.)
- Depth to Free Water in Pit: - (in.)
- Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:
No hydrology present.

LAND & WATER

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____
Drainage Class: _____
Field Observations
Confirm Mapped Type? X Yes _____ No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 6+	A	10 YR 2/1	--	--	Loam with large cobbles

Hydric Soil Indicators:

_____	Histosol	_____	Concretions
_____	Histic Epipedon	_____	High Organic Content in surface Layer in Sandy Soils
_____	Sulfidic Odor	_____	Organic Streaking in Sandy Soils
_____	Aquic Moisture Regime	_____	Listed on Local Hydric Soils List
_____	Reducing Conditions	_____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	_____	Other (Explain in Remarks)

Soil pit located in area of created upland habitat, soils consisting of fill material excavated from channel reconstruction and removed from historic wetland. Low-chroma colors present, but no direct evidence of hydric influence.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	_____	Yes	X	No	Is this Sampling Point Within a Wetland?	_____ Yes	X No
Wetland Hydrology Present?	_____	Yes	X	No			
Hydric Soils Present?	_____	Yes	X	No			

Remarks:
Sampling point in upland habitat.

Approved by HQUSACE 2/92

LAND & WATER

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Camp Creek	Date: 09/05/02
Applicant/Owner: MDT/Grasser	County: Ravalli
Investigator: Greg Howard	State: MT

Do Normal Circumstances exist on the site:	X	Yes		No
Is the site significantly disturbed (Atypical Situation)?		Yes		No
Is the area a potential Problem Area?:		Yes		No
(If needed, explain on reverse.)				

Community ID:
Transect ID: 1
Plot ID: 2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Carex nebrascensis*	H	OBL	9			
2	*Phalaris arundinacea*	H	FACW	10			
3	*Geum macrophyllum*	H	OBL	11			
4	*Agrostis alba*	H	FAC+	12			
5	*Epilobium ciliatum*	H	FACW	13			
6	*Thlaspi arvensis*	H	--	14			
7	*Salix exigua*	S	OBL	15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 6/7 = 85%

Area dominated by hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: ____ (in.)
- Depth to Free Water in Pit: ____ (in.)
- Depth to Saturated Soil: 8 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:
Pit saturated within upper 12 inches of surface. Drainage patterns evident, depression of lower topography. Historic channels of Camp Creek floodplain.

LAND & WATER

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____
Drainage Class: _____
Field Observations
Confirm Mapped Type? X Yes ____ No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 3	O	10 YR 2/2	--	--	Roots & organics
3 – 6	A1	10 YR 2/1	--	--	Sandy loam & roots
6 – 8	A2	10 YR 2/1	--	--	Peat & sandy loam

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	X	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Hydric soils present, low-chroma indicator and high organic content (peat).

WETLAND DETERMINATION

Hydrophytic Vegetation Present? X Yes ____ No
Wetland Hydrology Present? X Yes ____ No
Hydric Soils Present? X Yes ____ No

Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:
Sampling point is an emergent wetland type. Areas of lower topography, depressions running throughout. Undisturbed wetlands mapped during initial delineation.

Approved by HQUSACE 2/92

LAND & WATER

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Camp Creek	Date: 09/05/02
Applicant/Owner: MDT/Grasser	County: Ravalli
Investigator: Greg Howard	State: MT

Do Normal Circumstances exist on the site:	X	Yes		No
Is the site significantly disturbed (Atypical Situation)?		Yes		No
Is the area a potential Problem Area?:		Yes		No
(If needed, explain on reverse.)				

Community ID:
Transect ID: 1
Plot ID: 3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Carex nebrascensis*	H	OBL	9	*Cirsium arvense*		FACU+
2	*Phalaris arundinacea*	H	FACW	10	*Veronica americana*		OBL
3	*Carex utriculata*	H	OBL	11			
4	*Alopecurus pratensis*	H	FACW	12			
5	*Epilobium ciliatum*	H	FACW	13			
6	*Juncus ensifolius*	H	FACW	14			
7	*Trifolium pratense*	S	FACU	15			
8	*Plantago major*		FACU+	16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 7/10 = 70%

Area consisting of streambank, creek and floodplain margins, dominated by hydrophytic vegetation. Emergent wetlands and unconsolidated bottom.

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake, or Tide Gauge
_____ Aerial Photographs
_____ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: 6 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
X Saturated in Upper 12 Inches
_____ Water Marks
_____ Drift Lines
X Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 Inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks:
Flowing water through unconsolidated creek bottom. Floodplains with saturated soils with in upper 12 inches of surface. Sediment deposition along floodplain margins.

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____
Drainage Class: _____
Field Observations
Confirm Mapped Type? X Yes ____ No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 8+	B	10 YR 2/1	--	--	Loam with large cobbles

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	____	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Hydric soils present, low-chroma indicator.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? X Yes ____ No
Wetland Hydrology Present? X Yes ____ No
Hydric Soils Present? X Yes ____ No

Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:

Sampling point located in wetland and also Waters of the US. Floodplains along Camp Creek developing into emergent and scrub-shrub wetland types.

Approved by HQUSACE 2/92

LAND & WATER

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Camp Creek	Date: 09/05/02
Applicant/Owner: MDT/Grasser	County: Ravalli
Investigator: Greg Howard	State: MT

Do Normal Circumstances exist on the site:	X	Yes		No
Is the site significantly disturbed (Atypical Situation)?		Yes		No
Is the area a potential Problem Area?:		Yes		No
(If needed, explain on reverse.)				

Community ID:
Transect ID: 1
Plot ID: 4

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Carex nebrascensis	H	OBL	9			
2	*Phalaris arundinacea*	H	FACW	10			
3	*Agrostis alba*	H	FAC+	11			
4	*Carex lanuginosa*	H	OBL	12			
5	*Chenopodium album*	H	FAC	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). 5/5 = 100%

Area dominated by hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

Depth of Surface Water: ____ (in.)

Depth to Free Water in Pit: ____ (in.)

Depth to Saturated Soil: 10 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 Inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:
Pit saturated within upper 12 inches of surface and drainage patterns evident.

LAND & WATER

SOILS

Map Unit Name (Series and Phase): _____
Taxonomy (Subgroup): _____
Drainage Class: _____
Field Observations
Confirm Mapped Type? X Yes ____ No

Profile Description:

Depth inches	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 – 3	O	10 YR 2/1	--	--	Roots & organics
3 – 5	A	10 YR 2/1	--	--	Sandy loam & roots
5 – 7	B	--	--	--	Sand with fine gravels
7 – 10+	A	10 YR 2/1	--	--	Sandy loam with fine to medium gravels

Hydric Soil Indicators:

____	Histosol	____	Concretions
____	Histic Epipedon	X	High Organic Content in surface Layer in Sandy Soils
____	Sulfidic Odor	____	Organic Streaking in Sandy Soils
____	Aquic Moisture Regime	____	Listed on Local Hydric Soils List
____	Reducing Conditions	____	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	____	Other (Explain in Remarks)

Hydric soils present, low-chroma indicator and high organic content in sandy soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? X Yes ____ No
Wetland Hydrology Present? X Yes ____ No
Hydric Soils Present? X Yes ____ No

Is this Sampling Point Within a Wetland? X Yes ____ No

Remarks:
Sampling point is an emergent wetland type. Located on upper terrace adjacent to created floodplain. Remnant wetlands not disturbed during construction efforts.

Approved by HQUSACE 2/92

LAND & WATER

AA (1-1)

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

1. Project Name: Camp Creek 2. Project #: 130091.039 Control #:

3. Evaluation Date: Mo. 9 Day 5 Yr. 02 4. Evaluator(s): Greg Howard 5. Wetlands/Site #(s) Channel & Floodplain margins

6. Wetland Location(s): I. Legal: T 1 (N) or S; R 17 E or (W); S 27 & 34 ; T ___ N or S; R ___ E or W; S ___ :
II. Approx. Stationing or Mileposts:

III. Watershed: 17010205 GPS Reference No. (if applies):
Other Location Information: Sula Basin; construction of new Camp Creek Channel & Floodplain

7. a. Evaluating Agency: MDT ;
b. Purpose of Evaluation:
1. ___ Wetlands potentially affected by MDT project
2. ___ Mitigation wetlands; pre-construction
3. X Mitigation wetlands; post-construction
4. ___ Other

8. Wetland size: (total acres) ___ (visually estimated)
49 (measured, e.g. by GPS [if applies])

9. Assessment area: (AA, tot., ac., see instructions on determining AA) 30 (visually estimated)
___ (measured, e.g. by GPS [if applies])

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

HGM Class	System	Subsystem	Class	Water Regime	Modifier	% of AA
Riverine	Riverine	Upper Perennial	RB	H	-	30%
Riverine	Palustrine	-	EM	C	-	60%
Riverine	Palustrine	-	SS	C	-	10%

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

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

12. General condition of AA:
I. Regarding disturbance: (use matrix below to determine [circle] appropriate response)

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

Past disturbances include grazing, clearing & Hydrologic alteration.

Comments: (types of disturbance, intensity, season, etc.):
II. Prominent weedy, alien, & introduced species (including those not domesticated, feral): (list) Spotted knapweed Canada thistle, houndstongue, pennycress, common dandelion & thimble mustard
III. Provide brief descriptive summary of AA and surrounding land use/habitat: AA located in Sula Basin historically Heavily grazed. USFS lands & Private ownership adjacent. Surrounding land use/habitat include Pasture, Livestock grazing & logging.

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

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

Comments:

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)	D S	
Secondary habitat (list species)	(D) S	Bald Eagle & Bull Trout
Incidental habitat (list species)	D (S)	Gray Wolf
No usable habitat	D S	

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

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

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

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

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

Primary or critical habitat (list species)	D (S)	Western Cutthroat
Secondary habitat (list species)	D S	
Incidental habitat (list species)	D (S)	Raptors & bats
No usable habitat	D S	

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

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

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

14C. General Wildlife Habitat Rating:

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

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

Low (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- 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.
- X adequate adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

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

Structural diversity (see #13)	(High)								Moderate								Low			
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 [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

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

Comments:

14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted ih the comments.)

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

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

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

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

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

Comments: Reconstructed Channel should support native fish population. Enhancement of fi. habitat; Pools, riffles & Overhanging banks, Rating will improve with establishment of woody vegeta

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

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

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

II. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA (circle)? (Y) N
Comments: USFS office down stream, adjacent parcel w/ NAT Boundary

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

I. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

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

Comments: Newly constructed Flood plain margins have high capacity to hold large volumes of water during seasonal Flooding.

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

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

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

Comments: Minor sedimentation due to logging & Recent Forest Fires.

AA (1-4)

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

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

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

Comments: Low woody plant density along streambanks. Rating will increase after willow sprigs become more established

14I. Production Export/Food Chain Support:

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P = permanent/perennial; S/I = seasonal/intermittent; T/E /A= temporary/ephemeral or absent [see instructions for further definitions of these terms].)

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

Comments:

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

I. Discharge Indicators

- ___Springs are known or observed
- ___Vegetation growing during dormant season/drought
- _X_Wetland occurs at the toe of a natural slope
- ___Seeps are present at the wetland edge
- ___AA permanently flooded during drought periods
- ___Wetland contains an outlet, but no inlet
- ___Other

II. Recharge Indicators

- _X_Permeable substrate present without underlying impeding layer
- ___Wetland contains inlet but no outlet
- ___Other

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

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

Comments: Channel & Floodplain Located in Sala Basin, steep slopes on both sides of Basin. Wetlands occuring along toe of slopes.

14K. Uniqueness:

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

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

Comments: Rating Low due to high disturbance of AA.

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

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

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

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

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

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

Comments: Good potential For rec/ed site, located along Hwy 93.

AA (1-5)

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Function al Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	M	0.8	1	
B. MT Natural Heritage Program Species Habitat	H	0.8	1	
C. General Wildlife Habitat	M	0.7	1	
D. General Fish/Aquatic Habitat	M	0.7	1	
E. Flood Attenuation	M	0.5	1	
F. Short and Long Term Surface Water Storage	H	1.0	1	
G. Sediment/Nutrient/Toxicant Removal	M	0.6	1	
H. Sediment/Shoreline Stabilization	L	0.3	1	
I. Production Export/Food Chain Support	H	1.0	1	
J. Groundwater Discharge/Recharge	H	1.0	1	
K. Uniqueness	M	0.4	1	
L. Recreation/Education Potential	M	0.5	1	
Totals:		8.3	12	

69%

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

Category I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, go to Category II)
- ___ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or
- ___ Score of 1 functional point for Uniqueness; or
- ___ Score of 1 functional point for Flood Attenuation and answer to Question 14E.ii is "yes"; or
- ___ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.

Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)
- ___ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or
- ___ Score of .9 or 1 functional point for General Wildlife Habitat; or
- ___ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; or
- ___ "High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish/Aquatic Habitat; or
- ___ Score of .9 functional point for Uniqueness; or
- X Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)
- ___ "Low" rating for Uniqueness; and
- ___ "Low" rating for Production Export/Food Chain Support; and
- ___ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

LAND & WATER B-25 AA (2-1)

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

1. Project Name: Camp Creek 2. Project #: 130091.039 Control #:

3. Evaluation Date: Mo. 9 Day 5 Yr. 02 4. Evaluator(s): Greg Howard 5. Wetlands/Site #(s) Emergent Wetlands

6. Wetland Location(s): I. Legal: T 1 (N) or S; R 19 E or (W) S 22, 27 & 34 ; T ___ N or S; R ___ E or W; S ___ :
II. Approx. Stationing or Mileposts:

III. Watershed: 1 7 0 1 0 2 0 5 GPS Reference No. (if applies): NA
Other Location Information:

7. a. Evaluating Agency: MDT ;
b. Purpose of Evaluation:
1. ___ Wetlands potentially affected by MDT project
2. ___ Mitigation wetlands; pre-construction
3. X Mitigation wetlands; post-construction
4. ___ Other

8. Wetland size: (total acres) ___ (visually estimated)
49 (measured, e.g. by GPS [if applies])

9. Assessment area: (AA, tot., ac., see instructions on determining AA) 19 (visually estimated)
___ (measured, e.g. by GPS [if applies])

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

HGM Class	System	Subsystem	Class	Water Regime	Modifier	% of AA
Riverine	Palustrine	–	EM	J	D	100%

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

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

12. General condition of AA:
I. Regarding disturbance: (use matrix below to determine [circle] appropriate response)

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

Comments: (types of disturbance, intensity, season, etc.): Past alteration from historic grazing.
II. Prominent weedy, alien, & introduced species (including those not domesticated, feral): (list) Spotted Knapweed, Canada thistle, hound's tongue, pennycress, common dandelion & tumble mustard.
III. Provide brief descriptive summary of AA and surrounding land use/habitat: Wetland meadow, consisting of Emergent wetland types. Area of intensive grazing, Camp Creek Floodplain cleared of riparian vegetation for conversion into pasture lands.

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

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

Comments: Extensive Sedge and grass community, no shrub component.

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

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

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

Primary or critical habitat (list species)	D S	
Secondary habitat (list species)	(D) S	Bald Eagle
Incidental habitat (list species)	D (S)	Gray Wolf
No usable habitat	D S	

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

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

Sources for documented use (e.g. observations, records, etc): Rob Harris, Camp Creek Delineation (USFS & FWP).

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 (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)	D S	
Secondary habitat (list species)	D S	
Incidental habitat (list species)	D (S)	Raptors & bats
No usable habitat	D S	

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

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

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

14C. General Wildlife Habitat Rating:

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

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

Low (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- 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.
- X adequate adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

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

Structural diversity (see #13)	High								Moderate								(Low)			
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 [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

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

Comments:

14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle (NA) here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted ih the comments.)

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

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

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

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

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

Comments: Lack of fish habitat in Emergent wetland, no surface water

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

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

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

II. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA (circle)? (Y) N
Comments: USFS offices directly downstream & several other homes located nearby.

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

I. **Rating** (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

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

Comments: Surface water storage increased due to the addition of upland topography, restricted flow against new slopes.

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

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

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

Comments: Minor Sediment Source From burned forest. Nutrient potential due to heavy Livestock grazing in Sula Basin.

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

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

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

Comments:

14I. Production Export/Food Chain Support:

I. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P = permanent/perennial; S/I = seasonal/intermittent; T/E /A= temporary/ephemeral or absent [see instructions for further definitions of these terms].)

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

Comments: Riparian vegetation enhancement & return of hydrology will increase Rating.

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

I. Discharge Indicators

- ___Springs are known or observed
- ___Vegetation growing during dormant season/drought
- _X_Wetland occurs at the toe of a natural slope
- ___Seeps are present at the wetland edge
- ___AA permanently flooded during drought periods
- ___Wetland contains an outlet, but no inlet
- ___Other

II. Recharge Indicators

- _X_Permeable substrate present without underlying impeding layer
- ___Wetland contains inlet but no outlet
- ___Other

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

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

Comments: Site located in Suta Basin, steep slopes on both west & East side. East side Slopes of Basin have wetland observed at toe of Slope.

14K. Uniqueness:

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

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

Comments: Low structural diversity & common distribution throughout Region. High disturbance variable Lowers overall Rating.

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

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

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

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

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

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

Comments: Good potential for Rec./Ed. area, adjacent to Hwy 93, State owned.

AA (2-5)

FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	M	0.8	1	
B. MT Natural Heritage Program Species Habitat	L	0.1	1	
C. General Wildlife Habitat	M	0.5	1	
D. General Fish/Aquatic Habitat	-	-	0	
E. Flood Attenuation	M	0.6	1	
F. Short and Long Term Surface Water Storage	M	0.6	1	
G. Sediment/Nutrient/Toxicant Removal	H	1.0	1	
H. Sediment/Shoreline Stabilization	-	-	0	
I. Production Export/Food Chain Support	M	0.7	1	
J. Groundwater Discharge/Recharge	H	1.0	1	
K. Uniqueness	L	0.3	1	
L. Recreation/Education Potential	M	0.5	1	
Totals:		6.1	10	

61%

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

Category I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, go to Category II)
- ___ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ___ Score of 1 functional point for Uniqueness; **or**
- ___ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ___ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.

Category II Wetland: (Criteria for Category I not satisfied **and** meets **any one** of the following criteria; if not satisfied, go to Category IV)
- ___ Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; **or**
- ___ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ___ Score of .9 or 1 functional point for General Fish/Aquatic Habitat; **or**
- ___ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ___ Score of .9 functional point for Uniqueness; **or**
- ___ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.

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

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy criteria go to Category III)
- ___ "Low" rating for Uniqueness; **and**
- ___ "Low" rating for Production Export/Food Chain Support; **and**
- ___ Total actual functional points < 30% (round to nearest whole #) of total possible functional points

Wetland Mitigation Monitoring Project

for Land and Water Consulting **Project Name** **Camp Creek**

2002

		Date	**9/5/2002**
Turbellaria		*Dugesia*	4
Oligochaeta	Lumbriculidae	Lumbriculidae	4
Ephemeroptera	Bactidae	*Baetis tricaudatus*	4
	Ephemerellidae	*Ephemerella*	14
	Heptageniidae	*Cinygma*	3
		Nixe	1
	Leptophlebiidae	*Paraleptophlebia*	2
	Ameletidae	*Ameletus*	13
Plecoptera	Chloroperlidae	*Sweltsa*	1
	Perlodidae	*Skwala*	1
Trichoptera	Brachycentridae	*Brachycentrus* - early instar	8
	Lepidostomatidae	*Lepidostoma*	8
Coleoptera	Dytiscidae	*Oreodytes*	1
	Elmidae	*Heterlimnius*	11
		Lara avara	2
		Optioservus	7
		Zaitzevia	3
Diptera	Athericidae	*Atherix*	3
	Ceratopogonidae	*Bezzia/Palpomyia*	1
	Pelecorhynchidae	*Glutops*	1
	Simuliidae	*Simulium*	3
	Tipulidae	*Hexatoma*	1
		Tipula	1
	Chironomidae	Cricotopus Bicinctus Gr.	40
		Cricotopus nostococladius	3
		Micropsectra	38
		Odontomesa	2
		Pagastia	1
		Parametriocnemus	2
		Psectrocladius vernalis	1
		Stichtochironomus	1
		Tvetenia	4
		Total	189

Total taxa	32
POET	10
Chironomidae taxa	9
Crustacea taxa + Mollusca taxa	0
% Chironomidae	48.68%
Orthocladiinae/Chironomidae	0.51
%Amphipoda	0.00%
%Crustacea + %Mollusca	0.00%
HBI	3.79

Camp Creek, the assemblage collected at this site was unlike any other in this study; the fauna present was characteristic of a cold-water foothill or montane stream with cobble substrate. The site could not be evaluated as a wetland. The bioassessment method developed for montane streams of Western Montana (Bollman 1998) produced a score that suggested slight impairment of biotic integrity at this site. Impairment was likely due to deposited sediment, since the number of caddisfly taxa was lower than expected. Water quality appeared to be within expected limits for a montane stream, since the biotic index value (3.78) was low, and the site supported no fewer than 6 mayfly taxa. The presence of the turbellarian *Dugesia* sp. suggested that groundwater inputs influence streamflow at the sampled site.

%Dominant taxon	21.16%
%Collector-Gatherers	49.74%
%Filterers	1.59%

Scores (2002 criteria)

Total taxa

POET

Chironomidae taxa

Crustacea taxa + Mollusca taxa

% Chironomidae

Orthocladiinae/Chironomidae

%Amphipoda

%Crustacea + %Mollusca

HBI

%Dominant taxon

%Collector-Gatherers

%Filterers

Total score

Appendix C

REPRESENTATIVE PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
Camp Creek
Sula, Montana

LAND & WATER

Photo Point No. 1: View looking northeast along vegetation transect, end point in foreground.

Photo Point No. 2: View looking southwest along vegetation transect, starting point in foreground, located in upland community type.

Photo Point No. 3: View looking northeast, constructed Camp Creek channel and floodplain margins.

Photo Point No. 4: View looking north, floodplain margins with emergent wetland and riparian vegetation enhancements. Large containerized cottonwood and aspen plantings.

Photo Point No. 5: View looking north, Camp Creek and floodplain margins.

Photo Point No. 7: View looking south; lowest section of Camp Creek channel, north boundary of MDT parcel.

Photo Point No. 8: View looking west across mitigation site, upland community type in foreground. Emergent wetland and main channel beyond upland areas.

Photo Point No. 9: View looking north, main channel just below second culvert. Example of fabric work along constructed streambanks.

Photo Point No. 10: View looking south, section of channel with remnant shrub communities present.

Photo Point No. 11: View looking north, mature cottonwoods located along the main channel. Floodplain margins planted with containerized shrub & trees.

Photo Point No. 12: View looking south, main channel running along Grasser structures, remnant shrub community present.

Photo Point No. 13: View looking south, straight sections of main channel running across upper portion of Grasser parcel.

	
Photo Point No. 14: View looking west, an undisturbed section of Camp Creek entering Grasser parcel. Mature cottonwoods, alder, and willow.	

Photo Point No. 5: Panoramic looking west across site. Representative photo of typical channel and floodplain section present at Camp Creek. Transect located towards right side of photo. Photo taken from atop created upland slopes.

Photo Point No. 9: Panoramic looking north along ma in channel. Photo taken along road crossing and culvert. Representative photo of fabric work along streambank and floodplain margins with emergent wetlands.

Photo Point No. 11: View looking north along main creek, below upper road crossing and culvert near Grasser complex. Mature cottonwoods and remnant shrub communities present along creek. Example of intact fabric work along streambank, floodplain margins planted with riparian shrubs and trees.

Appendix D

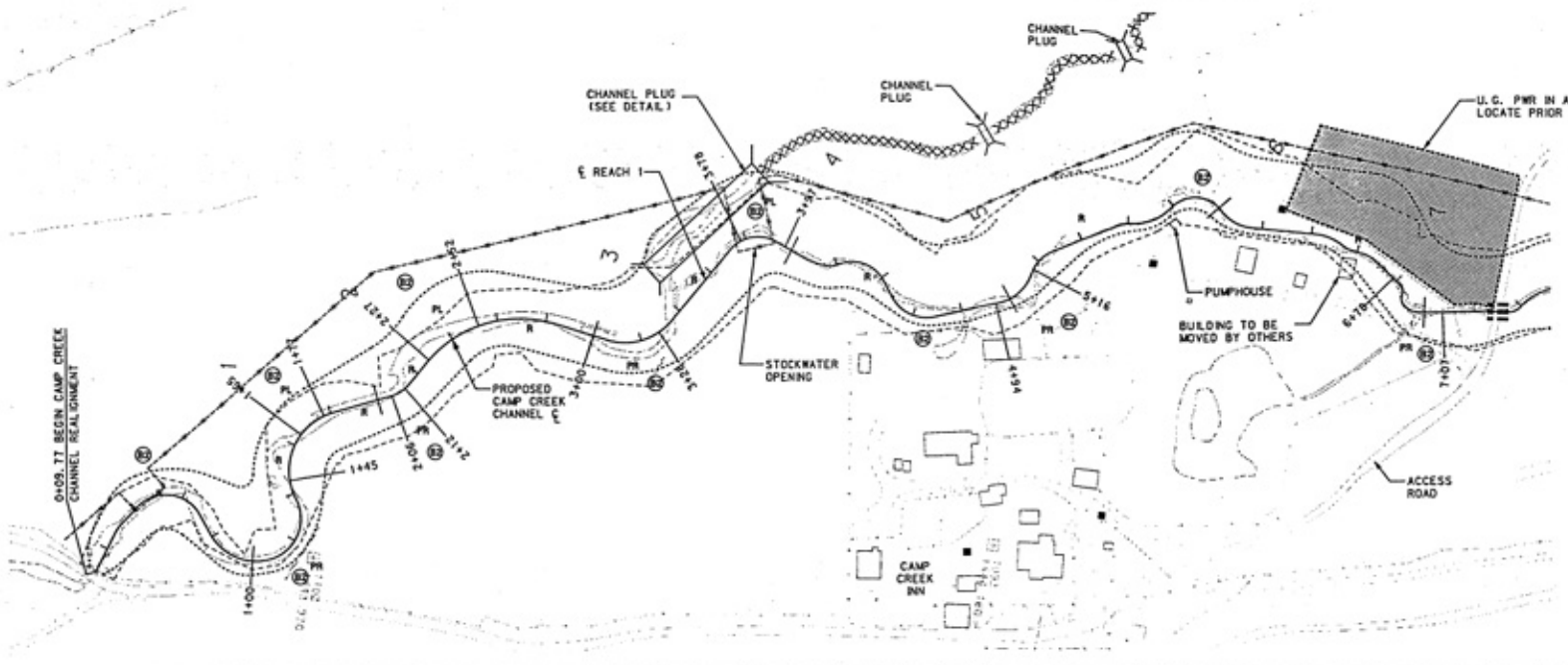
ORIGINAL SITE PLAN

MDT Wetland Mitigation Monitoring
Camp Creek
Sula, Montana

LAND & WATER

STATE	PROJECT NUMBER	SHEET
MONTANA	NH 41(24)	29

CAMP CREEK RESTORATION



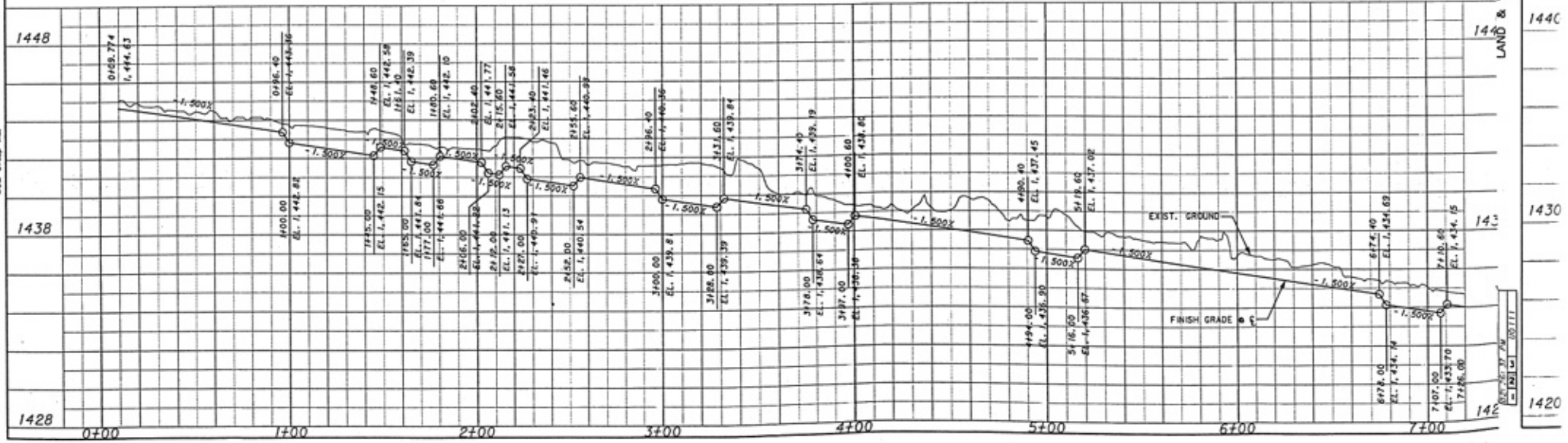
LEGEND

- (B2) BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
- PR POOL RIGHT
- PL POOL LEFT
- R RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
- XXXXXXXXX FILL IRR. DITCH
- NEW FENCE
- FLOOD PLAIN
- CONST. LIMITS

SCALE 1:1000

NOTES

1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.



LAND & WATER CONSULTING, INC.

WGM Group, Inc.

MDT MONTANA DEPARTMENT OF TRANSPORTATION

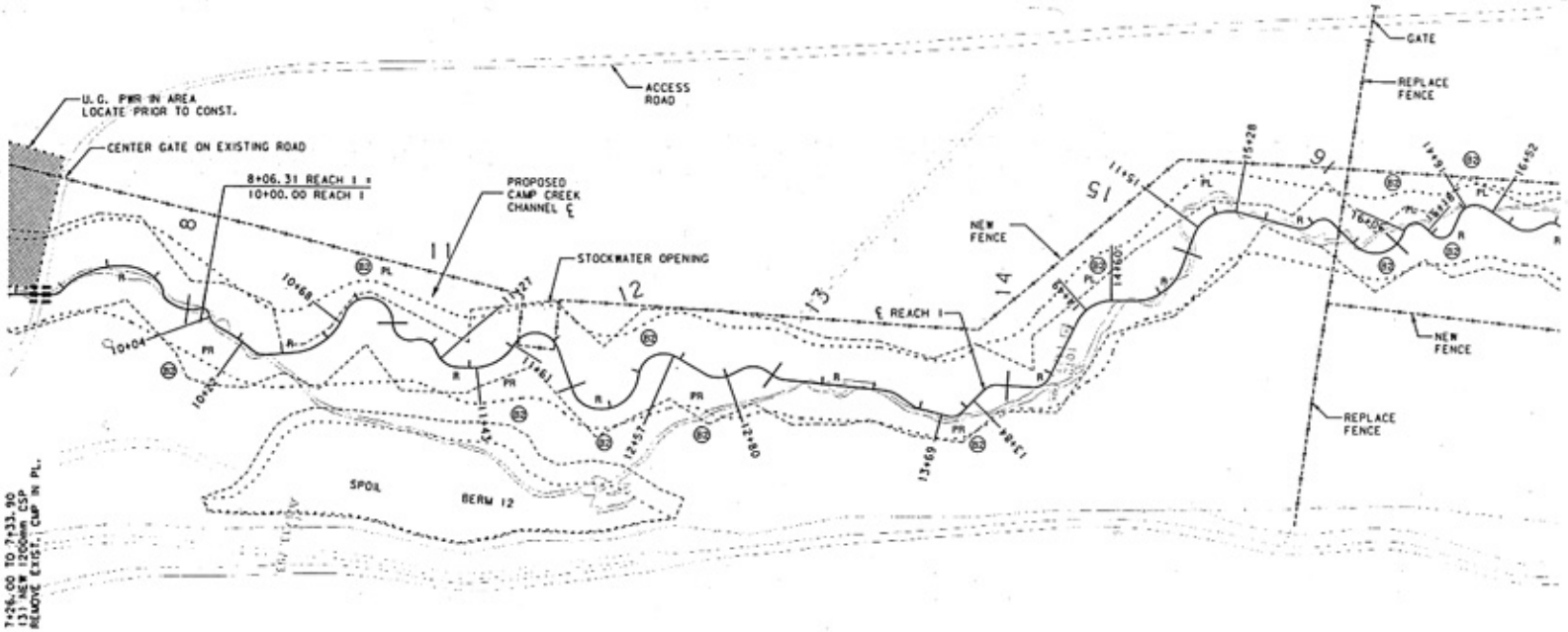
CADD 01 MAR 2001 WGM Group Inc.

\\ABSPL01\DGN

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 41(24)	30

CAMP CREEK RESTORATION

LAND & WATER D-2



LEGEND

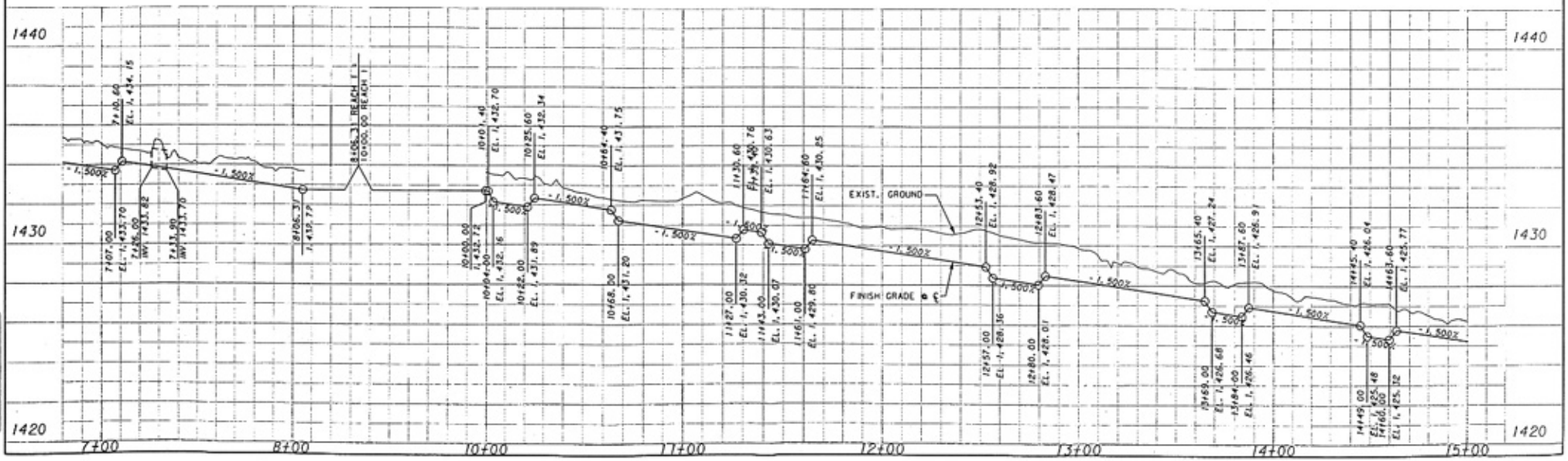
B2	BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
PR	POOL RIGHT
PL	POOL LEFT
R	RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
XXXXXXXXX	F&L WR, DITCH
----------	NEW FENCE
. . . . .	FLOOD PLAIN
----------	CONST. LIMITS

NOTES

1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.

SCALE 1:1000

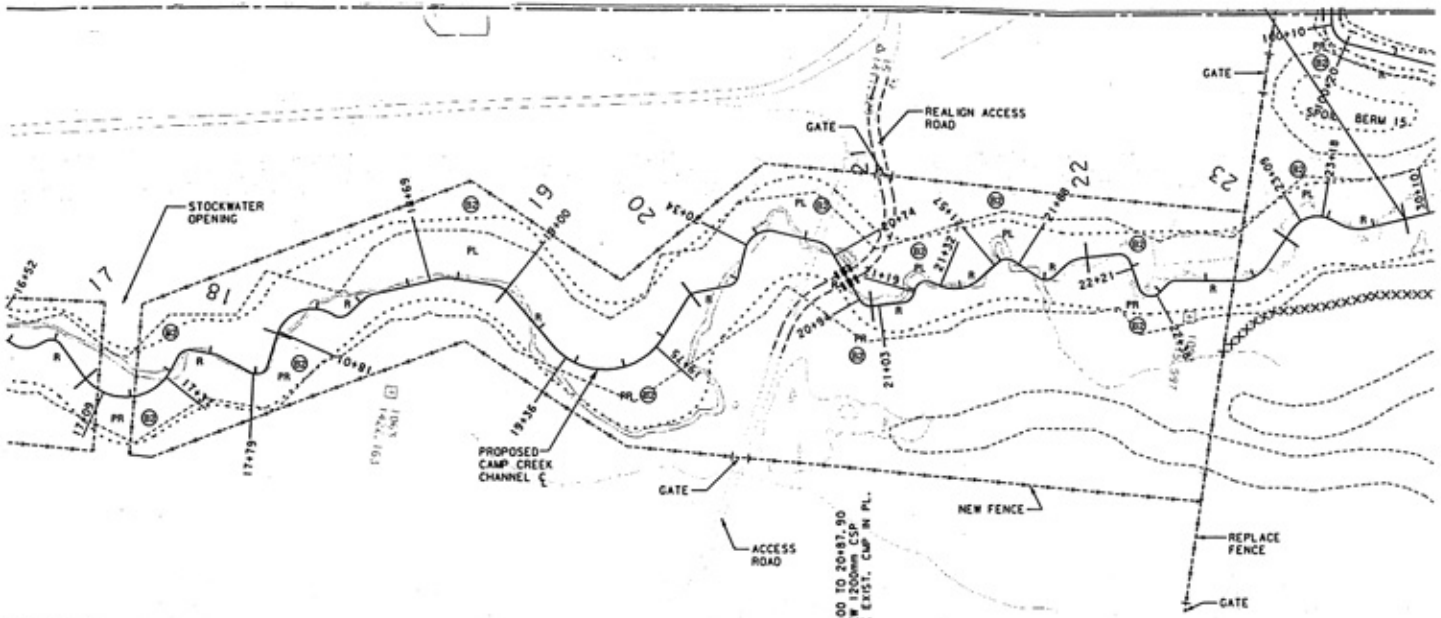
0 50M 100M



STATE	PROJECT NUMBER	SH
MONTANA	NH 41(24)	

CAMP CREEK RESTORATION

LAND & WATER D-1



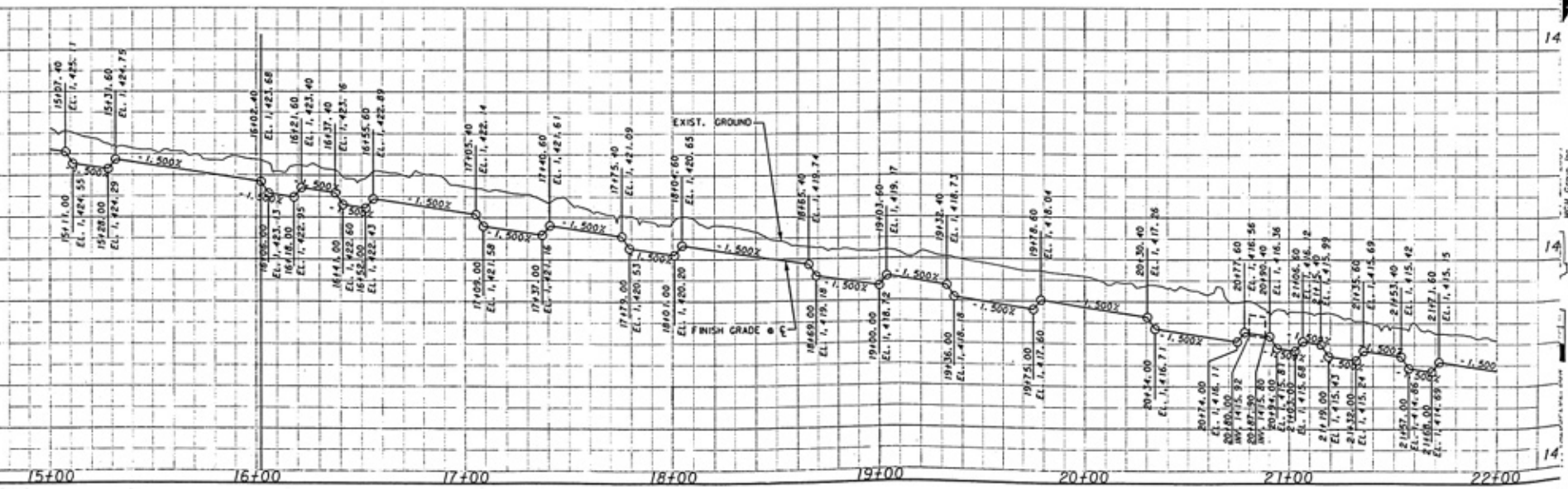
LEGEND

(B2)	BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
PR	POOL RIGHT
PL	POOL LEFT
R	RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
XXXXXXXXX	FILL IRR. DITCH
----------	NEW FENCE
. . . . .	FLOOD PLAIN
- - - - -	CONST. LIMITS

N

SCALE 1:1000
0 50M

NOTES
1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.



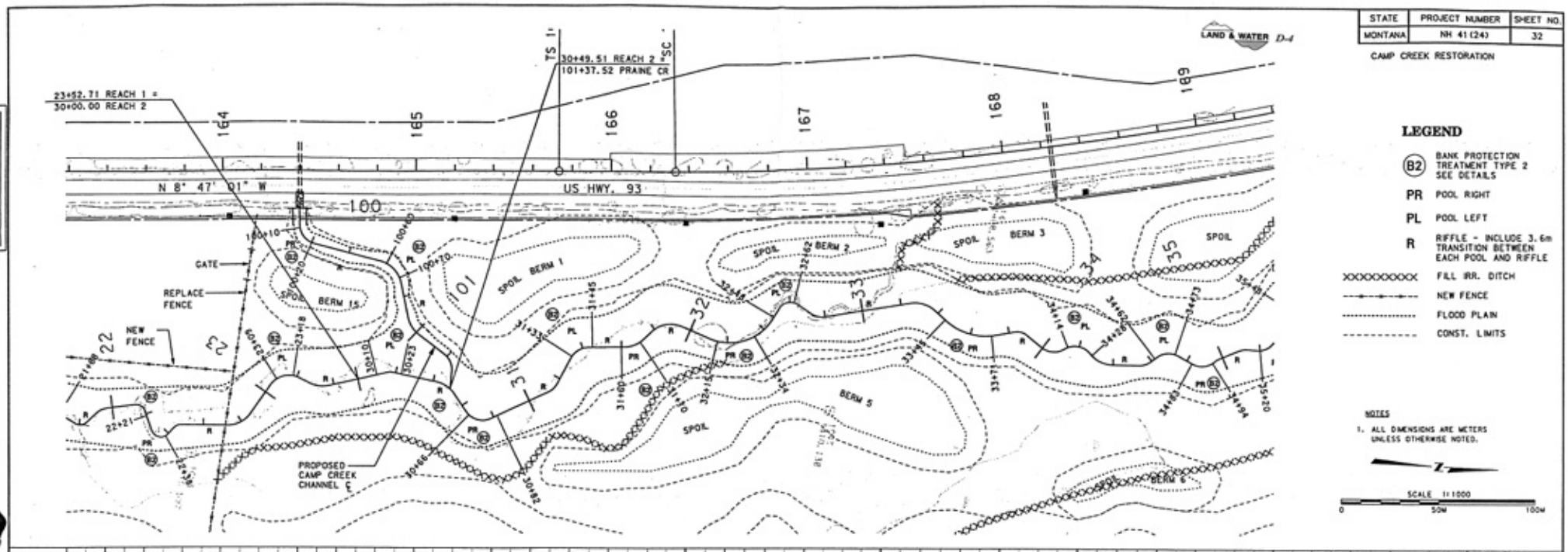
LAND & WATER CONSULTING, INC.

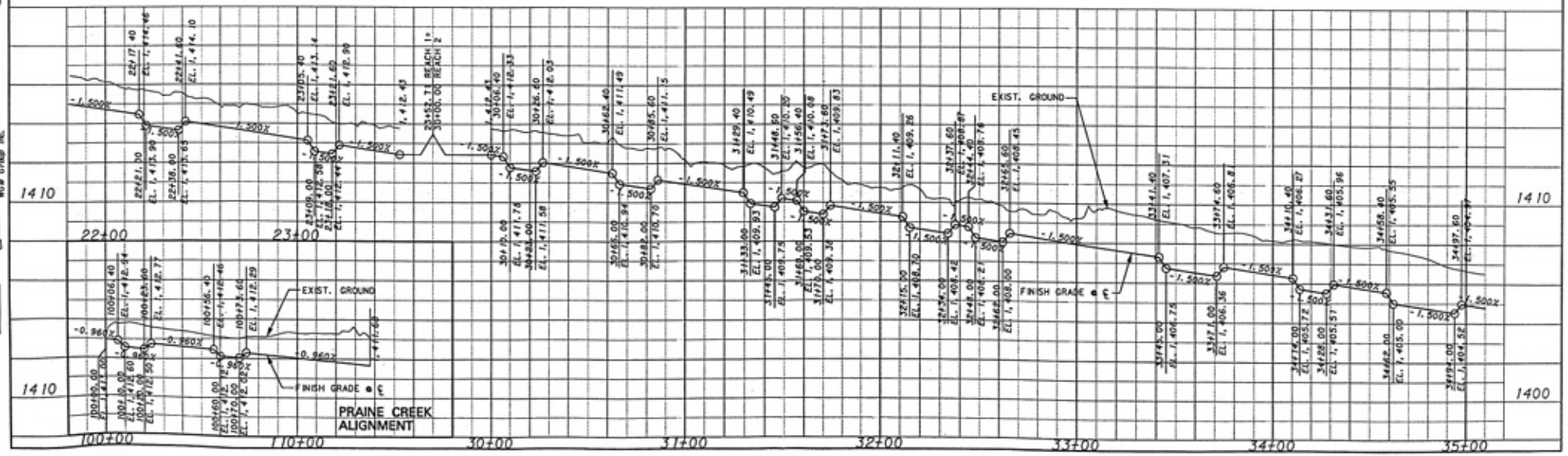
WGM GROUP, INC.

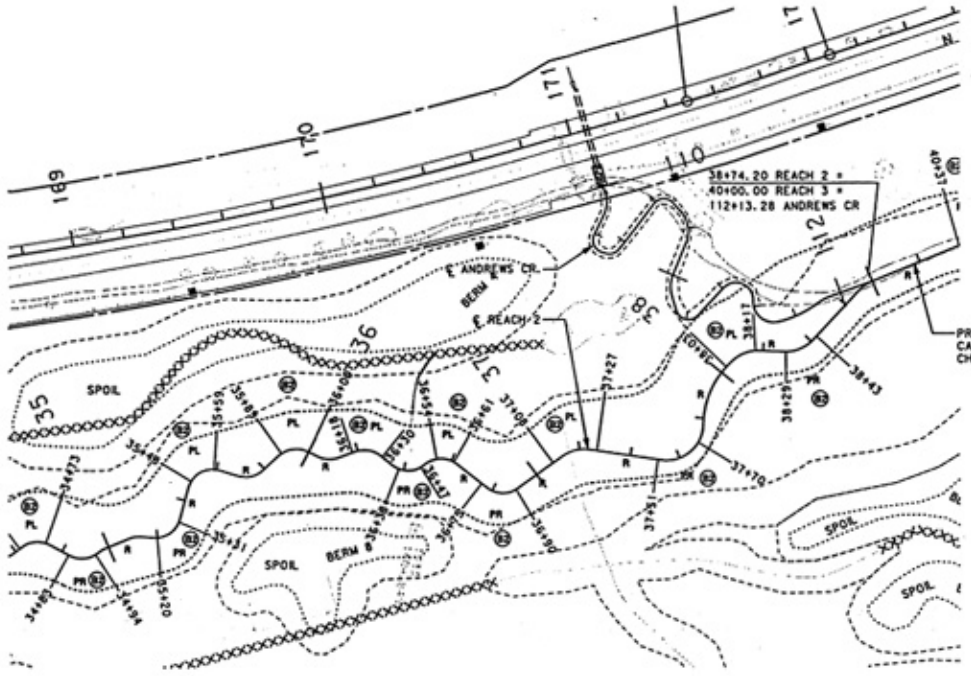
MDT MONTANA DEPARTMENT OF TRANSPORTATION

STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 41 (24)	32

CAMP CREEK RESTORATION







STATE	PROJECT NUMBER	SHEET NO
MONTANA	NH 41 (24)	33

LAND & WATER D-5

CAMP CREEK RESTORATION

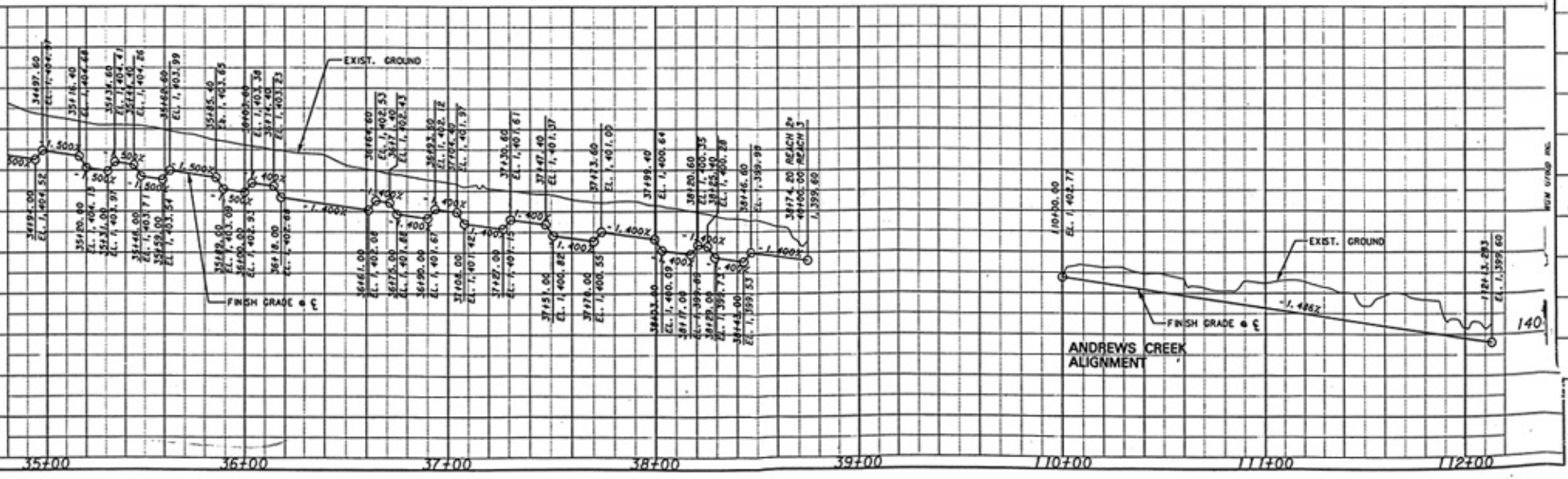
LEGEND

- (B2) BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
- PR POOL RIGHT
- PL POOL LEFT
- R RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
- XXXXXXXXX FILL IRR. DITCH
- NEW FENCE
- FLOOD PLAIN
- CONST. LIMITS

NOTES

1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.

SCALE 1:1000



LAND & WATER CONSULTING, INC. | WGM Group, Inc. | MONTANA DEPARTMENT OF TRANSPORTATION

...\A285PL02.DGN 16:14:21 01 MAR 2001 WGM Group Inc. MONTANA CADD

01001/sh/RD/A285PL02.DGN Mar. 01, 2001 16:14:21

Appendix E

BIRD SURVEY PROTOCOL
GPS PROTOCOL
MACROINVERTEBRATE PROTOCOL

MDT Wetland Mitigation Monitoring
Camp Creek
Sula, Montana

LAND & WATER

BIRD SURVEY PROTOCOL

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

Species Use within the Mitigation Wetland: Survey Method

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

Sites that can be circumambulated or walked throughout.

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

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

Sites that cannot be circumambulated.

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

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

Species Use within the Mitigation Wetland: Data Recording

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

1. Bird Species List

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

2. Bird Density

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

3. Bird Behavior

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

4. Bird Species Habitat Use

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

AQUATIC INVERTEBRATE SAMPLING PROTOCOL

Equipment List

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

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

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

Site Selection

Select the sampling site with these considerations in mind:

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

Sampling

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

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

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

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

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

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

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

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

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

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

Photograph the sampled site.

Sample Handling/Shipping

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

GPS Mapping and Aerial Photo Referencing Procedure

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

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

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

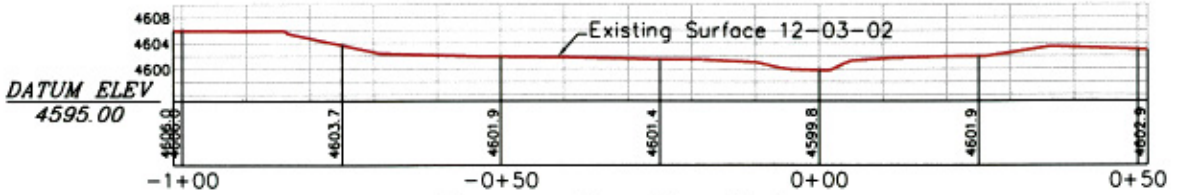
Any relationship of features located to easement or property lines are not to be construed from these figures. These relationships can only be determined with a survey by a licensed surveyor.

Appendix F

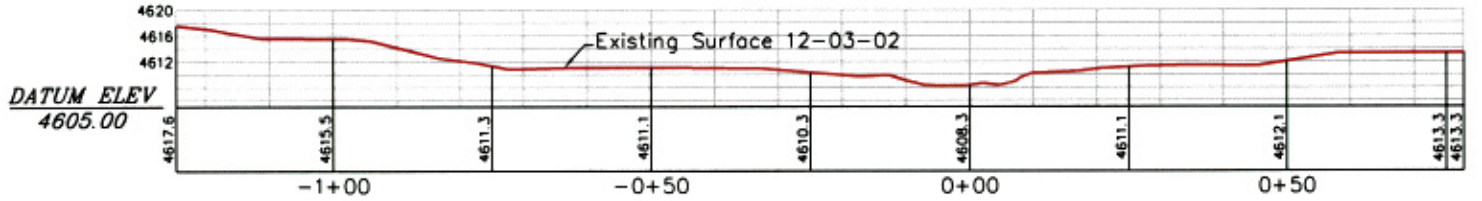
CAMP CREEK CHANNEL CROSS SECTIONS
PLANTING SPECIFICATIONS

MDT Wetland Mitigation Monitoring
Camp Creek
Sula, Montana

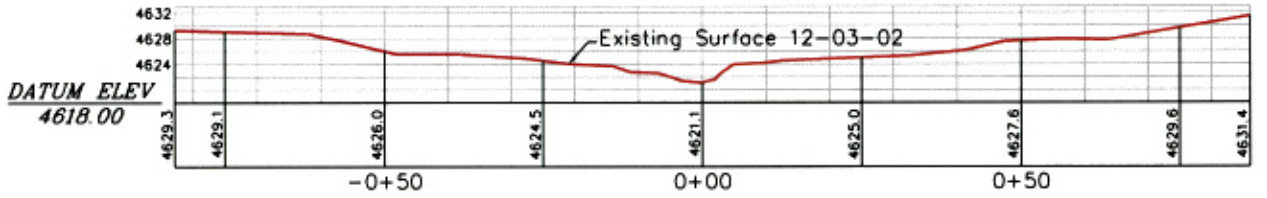
LAND & WATER



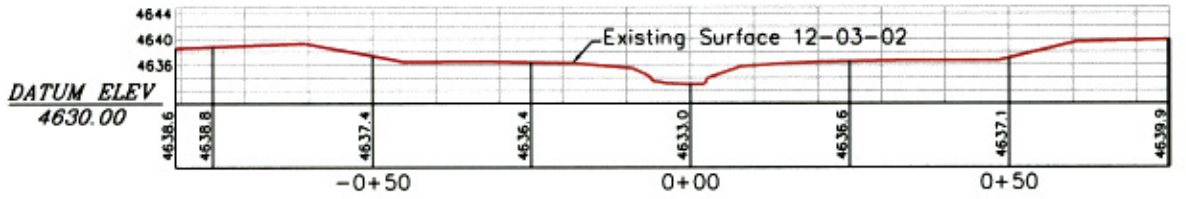
Cross Section 1-A



Cross Section 2-A



Cross Section 3-A



Cross Section 4-A

LAND & WATER F-1

LAND & WATER CONSULTING, INC. P.O. BOX 8254 Missoula, MT 59807	PROJ NO: 130091T38	DRAWN: RA	PROJECT NAME: MDT Camp Creek Wetland Mitigation	FIGURE 5
	FILE NAME: TASK38BASE.DWG	CHECKED: RA		REV -
	SCALE: 1"-30 feet	APPVD: RA	DRAWING TITLE: Channel Cross Sections	DATE: XX/XX/XX
	LOCATION: Sula,MT	PROJ MGR: J.Bergland		

MONITORING

LAND & WATER F-2

Nature's Enhancement, Inc.

2980 Eastside Highway
Stevensville, Montana 59870
Phone: (406) 777-3560
FAX: (406) 777-3560

SOLD TO:
Department of Transportation
Project No:
NH7-1(58)9 F Sula-North & South
NH41(24) Camp Creek Restoration

SHIPPED TO:
Sula North & South/ Camp Creek Restoration
Project Site
Sula, Montana

INVOICE NUMBER	
PURCHASE ORDER #	
ORDER DATE	
SHIP DATE (EST.)	
TERMS	
DUE DATE	
SALES REP	Greg
SHIP VIA	NE

	GC5: REVEGETATION		
446	Alnus incana	1 Gallon	1-2'
315	Alnus incana	5 Gallon	3-4'
752	Amelanchier alnifolia	1 Gallon	1-2'
374	Betula occidentalis	5 Gallon	3-4'
667	Cornus stolonifera	1 Gallon	2-3'
369	Cornus stolonifera	5 Gallon	4-5'
213	Pinus contorta	1 Gallon	1-2'
89	Pinus contorta	5 Gallon	2-3'
213	Pinus ponderosa	1 Gallon	1-2'
89	Pinus ponderosa	5 Gallon	2-3'
303	Populus tremuloides	1 Gallon	18-24"SS
15	Populus tremuloides	5 Gallon	4-5'SS
791	Populus tremuloides	1 Gallon	18-24"MS
311	Populus tremuloides	5 Gallon	4-5'MS
500	Populus trichocarpa	1 Gallon	2-3'
518	Populus trichocarpa	5 Gallon	5-6'
2025	Potentilla fruticosa	1 Gallon	12-18"
213	Pseudotsuga menziesii	1 Gallon	12-15"
89	Pseudotsuga menziesii	5 Gallon	24-30"
1178	Rosa woodsii	1 Gallon	2-3'
1902	Willox (Salix spp.)	1 Gallon	2-3'MS

LAND & WATER F-3

429	Willox (Salix spp.)	5 Gallon	4-6MS
1178	Syphoricarpos albus	1 Gallon	18-24"
10681	Installation of above 1 Gallon Plants		
2598	Installation of above 5 Gallon Plants		
20,480	Willow Cuttings 12" long with a minimum ba 12" x .75 Base of .75 inches(800/Hectare) Includes collection, installation		
	WILLOW SALVAGE		
57	Tree Spade dig at a minimum diameter of 24", burlap, basket, crimp, tie		
	Storage of the above on site in .75m fine soil, to be provided by prime contractor		
	Replant willow clumps		

Shipping Charges:

Common Carrier (CMN): billed COD from the trucking company.

Nature's Enhancement (NE): billed from NE on the Final Invoice.

Nursery Pick Up (NPU): no charge.

SUBTOTAL	
QTY. DISCOUNT	Included
SHIPPING (ESTIMATE)	Included
BOXING & HANDLING	Included
TOTAL	0.00

$0.00 PAY THIS AMOUNT

Questions concerning this order?
Call: PHONE: (406) 777-3560
FAX: (406) 777-3560

MAKE ALL CHECKS PAYABLE TO:
Nature's Enhancement, Inc.
2080 Eastside Highway
Stevensville, Montana 59870

THANK YOU FOR YOUR ORDER! WE LOOK FORWARD TO SERVING YOU AGAIN.

LAND & WATER F-4

SEED BLENDING REPORT

Dept. of Transportation, Great Falls, MT

1-Materials Bureau, (Pat Hoy)
1-District Lab Gt. Falls
1-E.P.M. T. BENEDIK — MISSOULA

PROJECT NO.: NH 41(24) TERMINI: CAMP CREEK RESTORATION

BLENDING WITNESSED BY: JAMES O. BLOSSOM JB DATE: 04/22/2002

LOCATION: Fairfield, Montana

SEED SUPPLIER: Treasure State Seed Inc.

Type Of Seed	Lot No.	~~Acre~~ Hectare Area 1 LBS kg Pls per ~~Ac.~~ ha	(d) Total ~~kg~~ LBS Pls	(e) Total Bulk Seed Blended For Area 1	MSU Seed Laboratory test results (a) % Purity	(b) % Germ	(c) % Pls	Hectare Area 2 kg Pls Per ha	(d) Total kg Pls	(e) Total Bulk Seed Blended for Area 2	Mat'ls. Bureau Pretest Lab. No	MSU Test Date Expires
MEADOW BARLEY •	NBS-1-0533H	0.5	0.6	0.7	93.59	97	90.78					
BLUEJOINT REEDGRASS •	CACA24204	0.3	0.4	0.6	85.86	77	66.13					
FOWL BLUEGRASS •	00-043	2.0	2.5	3.2	86.91	89	77.35					
TUFFED HAIRGRASS •	99-1438-75	2.0	2.5	2.7	94.2	99	93.26					
BLUE WILDRYE •	GBS-0-300	7.0	8.8	9.7	99.06	92	91.15					
BROMAR MOUNTAIN BROME	006-026-12A	6.0	7.5	7.8	98.85	97	95.88					
TOTAL				24.7	LBS							

BULK SEEDING RATE AREA 1 19.76 ~~KILOGRAMS~~ LBS (kg) PER ~~HECTARE~~ ACRE (ha). BULK AREA 2 _____ KILOGRAMS (kg) PER HECTARE (ha)

% PURITY (a) X % GERMINATION (b) = % PURE LIVE SEED © X 100.

TOTAL KILOGRAMS (kg) PURE LIVE SEED (d) = % PURE LIVE SEED © X 100 = BULK SEED NEEDED (e)

REMARKS: