MONTANA DEPARTMENT OF TRANSPORTATION
WETLAND MITIGATION MONITORING REPORT: YEAR 2011

Camp Creek
Ravalli County, Montana

Prepared for:

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

Prepared by:

CONFLUENCE
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December 2011

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Sula, Ravalli County, Montana

MDT Project Number NH 41(24)
Control Number 1285

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CCI Project No: MDT.004

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Cover: Photo of Camp Creek showing well-developed shrub-dominated riparian corridor.

1. INTRODUCTION

The Camp Creek Wetland Mitigation 2011 Monitoring Report documents the results of the ninth year of monitoring completed at the Camp Creek mitigation site. The Montana Department of Transportation (MDT) developed the Camp Creek mitigation project to compensate for stream and wetland impacts associated with the Sula-North and South construction projects. Excess credits may be applied toward future MDT projects in the Bitterroot Valley.

Camp Creek is located in the Lower Clark Fork region within MDT Watershed #3, approximately three miles south of Sula, Montana (Figure 1). The property is located in Sections 27 and 34, Township 1 North and Range 19 West, Ravalli County. Elevations at the site range from 4,600 feet at the north boundary to 4,730 feet at the south boundary. The approximate site boundary is delineated on Figure 2 (Appendix A).

Figures 2 and 3 (Appendix A) show the mapped site features and monitoring activity locations, respectively. Appendix B contains the MDT Mitigation Site Monitoring Form, the US Army Corps of Engineers (USACE) Routine Wetland Determination Data Forms (Environmental Laboratory 1987), and the MDT Montana Wetland Assessment Forms. Appendix C contains relevant site photographs and Appendix D contains the project plan sheet.

The project is located along the historic Camp Creek floodplain within the Sula Basin. Camp Creek traverses the valley bottom, eventually draining into the East Fork of the Bitterroot River. The primary source of hydrology for the restored channel and floodplain margins is seasonal flooding and perennial surface water flow. Groundwater stored in the deep alluvial substrate of the Sula Basin serves as a secondary hydrology source. Andrews and Praine Creeks drain into Camp Creek within the project boundaries.

Construction at the Camp Creek mitigation site was completed during spring 2002. Long-term project goals included restoration of the Camp Creek channel bottom; restoration of wetland functions, creation, and enhancement of riverine wetlands; and enhancement of heavily grazed and cleared riparian vegetation. Construction diagrams are presented in Appendix D. The project goals are summarized below.

Functional Restoration

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

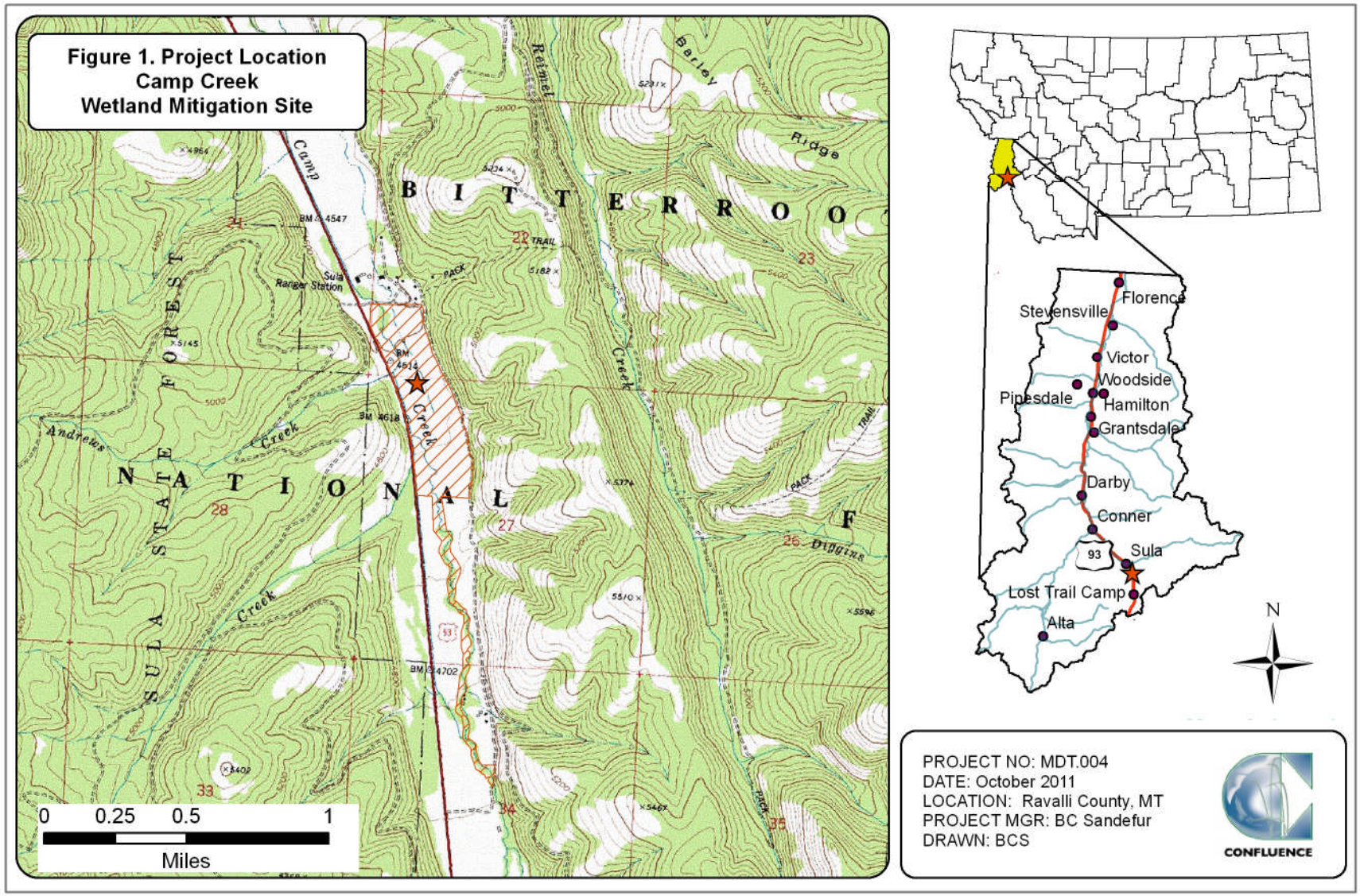

Figure 1. Project Location Camp Creek Wetland Mitigation Site

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Enhancement

- Plant riparian shrubs and trees throughout the created floodplain margins.
- Plant drier upland species in constructed upland slopes.

Creation

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

The mitigation site design focused on replacing specific wetland functions affected by MDT roadway projects including stormwater retention, roadway runoff filtration, sediment and nutrient retention, water quality, groundwater recharge, and wildlife habitat. The MDT and the USACE developed the credit allocation method for this project in 2006. The method is functional-unit based, where the wetland acreage for each assessment area (AA) is multiplied by the total score of the AA to yield the overall functional unit score. The calculation was completed before and after project construction. The difference between the two numbers, or functional unit gain, was divided by the post-project score to arrive at the approximate credit acreage for that AA. Credit acreages for each AA are summed to arrive at a total for the site. Created wetlands within the project corridor are required to meet the three parameter criteria for hydrology, vegetation, and soils established for determining wetland areas as outlined in the *1987 US Army Corps of Engineers Wetland Delineation Manual for the Determination of Wetlands* (Environmental Laboratory 1987).

2. METHODS

The Camp Creek mitigation site encompasses two parcels that were assessed on August 2, 2011. Monitoring was conducted on the MDT-owned portion of the site and the fenced portion of the adjacent, upstream Grasser property, consistent with previous monitoring years.

Information contained on the Mitigation Monitoring Form and the Wetland Data Form was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix B). Monitoring activity locations were mapped using a global positioning system (GPS) (Figure 2, Appendix A). Information collected included the wetland delineation, wetland/open water/aquatic habitat boundary mapping, vegetation community mapping, vegetation transect monitoring, soil data collection, hydrology data collection, bird and wildlife use documentation, photographs, stream cross-section data at two established points, functional assessment, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

Technical criteria for wetland hydrology guidelines have been established as “permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (usually 14 days or more or 12.5 percent) during the growing season” (Environmental Laboratory 1987). Systems with continuous inundation or saturation for greater than 12.5 percent of the growing

season are considered wetlands. The frost-free period recorded for the area defined by the predominant soil map unit, Beehive-Jeru-Jurvannah complex, is 40 to 75 days (USDA 2010). Areas defined as wetlands would require at least 5 days of inundation or saturation within 12 inches of the ground surface to meet the hydrology criteria.

The presence of hydrological indicators as outlined on the Wetland Data Form were assessed at six data points established within the project area (Figure 2, Appendix A). Hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on the electronic wetland data form (Appendix B). Hydrologic assessments allow evaluation of mitigation goals addressing inundation/saturation requirements.

No groundwater monitoring wells were present on the site. Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data was recorded electronically on the wetland determination form (Appendix B).

Two cross-section locations across Camp Creek were surveyed on the MDT-owned parcel, one upstream and one downstream of the Praine Creek confluence. These are designated as “XS 3-A” and “XS 4-A” on Figure 2 (Appendix A). The cross-sectional surveys measured the potential lateral and vertical migration of the channel.

2.2. Vegetation

The boundaries of general dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on 2011 aerial photographs. The percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (less than 1 percent) 1 (1 to 5 percent), 2 (6 to10 percent), 3 (11 to 20 percent), 4 (21 to 50 percent), and 5 (greater than 50 percent) (Appendix B).

Temporal changes in vegetation were evaluated through annual assessments of a static belt transect (Figure 2, Appendix A). Vegetation composition was assessed and recorded on one vegetation belt transect approximately 10 feet wide and 471 feet long (Figure 2, Appendix A). The transect location was recorded with a GPS unit. Spatial changes in the dominant vegetation communities were recorded along the stationed transect. The percent cover of each vegetation species within the “belt” was estimated using the same values and cover ranges listed for the community polygon data on the aerial photograph (Appendix B). Photographs were taken at the endpoints of the transect during the monitoring event (Appendix C).

A comprehensive plant species list has been maintained for the site. Trees and shrubs were planted in spring 2002 and 2008 for revegetation enhancement credit. Survival of the planted species was evaluated during the monitoring event.

The location of noxious weeds was noted in the field and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "**x**", "▲", or "■" representing 0 to 0.1 acre, 0.1 to 1.0 acre, or greater than 1 acre in extent, respectively. Cover classes are represented by T, L, M, or H, for less than 1 percent, 1 to 5 percent, 2 to 25 percent, and 25 to 100 percent, respectively, as listed on Figure 3 (Appendix A).

2.3. Soil

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

2.4. Wetland Delineation

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

The USACE determined that the 1987 Wetland Manual should continue to be used at MDT mitigation sites where baseline wetland conditions had been established prior to 2008. Consequently, the use of the 2010 Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010b) was not required.

The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was classified as an atypical situation, potential problem area, or special aquatic site, i.e., mudflat. The wetland boundary was identified on the 2011 aerial photograph. Wetland areas were estimated using geographic information system (GIS) methodology.

2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the wetland monitoring form during the site visit. Indirect use indicators, including tracks, scat, burrow, eggshells, skins, and bones, were also recorded (Appendix B). These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive list of wildlife species observed directly and indirectly from 2002 to 2011 was compiled and presented in section 3.5 of this report.

2.6. Functional Assessment

The baseline functional assessment was completed by Turnstone Biological in 2001. The 1999 MDT Montana Wetland Assessment Method (Berglund 1999) has been used since then to complete post-construction functional assessments of the site. Field data for this assessment were collected during the site visit. A Wetland Assessment Form was completed for each wetland or group of wetlands (Assessment Areas) (Appendix B).

2.7. Photo Documentation

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

2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS unit during the 2011 monitoring season. Points were collected using WAAS-enabled differential correction satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, exported into GIS, and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto the 2011 aerial photograph, then digitized. Site features and survey points that were mapped included fence boundaries, photograph points, transect beginning and end, wetland boundaries, and vegetation community boundaries.

2.9. Maintenance Needs

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

3. RESULTS

3.1. Hydrology

The average annual total precipitation recorded at the Sula 3 ENE, Montana (247964) weather station from December 1955 to December 2010 was 16.06 inches (WRCC 2011). Total precipitation for 2010 was 16.82 inches, 0.75 above this 55 year average. Precipitation totals between January and August were 11.32 inches, 12.21 inches, and 10.58 inches for the long-term average, 2010, and 2011, respectively (NCDC 2011).

The average surface water depth of Camp Creek was 0.5 feet with a range between 0.0 and 1.5 feet. Approximately 10 percent of the site was inundated during the 2011 site visit and primarily included the open water associated with Camp Creek. Six data points (Figure 2, Appendix A) were located along the wetland swale in the eastern half of the site. Three data points (CC-1w, CC-2w, and CC-3w) exhibited wetland hydrology. Hydrological indicators at CC-1w were saturation in the upper 12 inches of the soil (primary) and water-stained leaves and local soil survey data (secondary). No primary hydrologic indicators were observed at data points CC-1u, CC-2u, or CC-3u, although the mapped soil unit at CC-1u and CC-3u was listed as hydric.

The main source of hydrology for the mitigation site is Camp Creek, a perennial stream that flows out of the south end of the Bitterroot Mountains. The creek floods seasonally, historically providing surface water inflow to a hydrologically connected swale that flows through the floodplain east of the main channel. Although signs of surface flow were observed within this flood swale in 2011, it was not apparent that this surface flow originated from Camp Creek and may have been the result of spring snow melt and surface water contributed from precipitation. Two other channels, Andrews and Praine Creeks, flow into Camp Creek within the project site and supplement hydrology along these two channels and into Camp Creek. Secondary hydrological sources include runoff from ephemeral drainages east of the site, groundwater moving through coarse alluvium materials located throughout the valley bottom, and surface runoff. The mitigation site, located within the historic Camp Creek floodplain, consists of a constructed main channel, streambanks, and floodplain terraces. There are depression wetlands on the site that have historically been supported by seasonal overland flooding of Camp Creek and groundwater flows. The creek was historically diverted into a channel that flowed along the edge of Highway 93. Several ditches designed to drain the wetland meadow complex were filled and abandoned during construction. The ditches were located south of the MDT-owned parcel and at the point the creek leaves Grasser's parcel. The removal of the drain ditches facilitated groundwater recharge.

Long-term average peak surface water flow rates in Camp Creek have been recorded at 222 cubic feet second (cfs). Low water flow rates averaged 10 cfs. The 2009 stream flow rates for the closest operating US Geological Survey river gauge, the Bitterroot River near Darby, were above normal for the month of May

and below normal for June in 2009 (Chart 1). Stream flow rates in May 2010 were more than 1,500 cfs below average. Stream flows were 500 cfs higher than the mean in June 2010 and average during July and August 2010. The August 2010 flows were slightly lower than the August 2009 rates (Chart 1). The mitigation site was drier overall in 2010 than in 2009. Stream flows were consistently above average during 2011, a reflection of the above average snowpack in the mountains within this watershed. The hydrograph peaked in June of 2011 and appeared to provide wetland hydrology for a longer duration across the site during the 2011 growing season.

Ravalli County was assigned "severe drought" status in 2007 by the Montana Department of Natural Resources and Conservation (DNRC). Ravalli County was not under drought status in 2009, 2010, or 2011 (as of September 2011) (NRIS 2011).

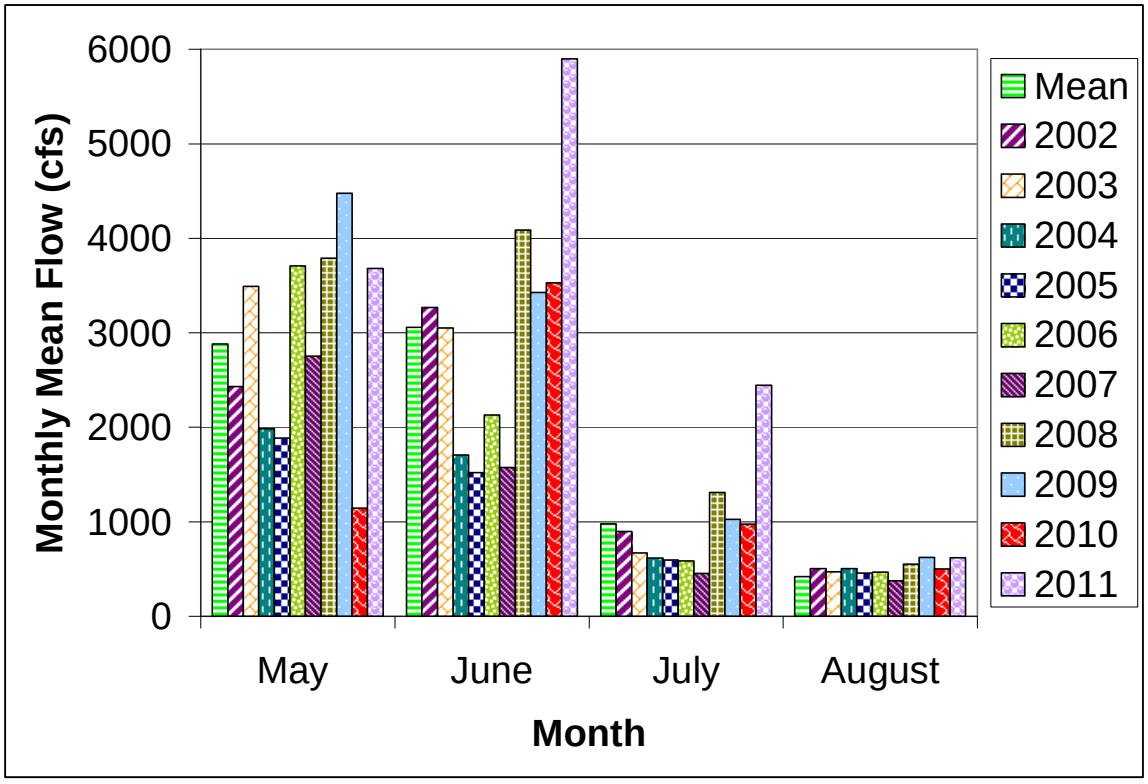

Chart 1. Graph of mean monthly flows for May to August of 2002 to 2011 as compared to long-term mean monthly flows (1937-2008) on the Bitterroot River near Darby, Montana.

Cross-section survey results of XS-3A and XS-4A are presented in Charts 2 through 5. Photographs of the cross-sections are shown on pages C-11 through C-13 of Appendix C. The cross-sections present post-project baseline (2002) and survey results from 2007 through 2011.

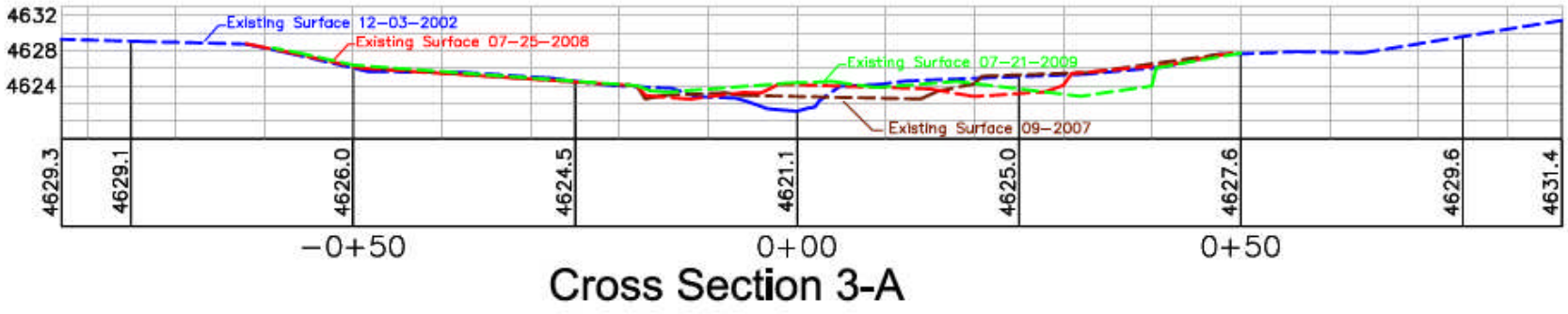

Chart 2. Cross Section data for 3-A between 2002 and 2009.

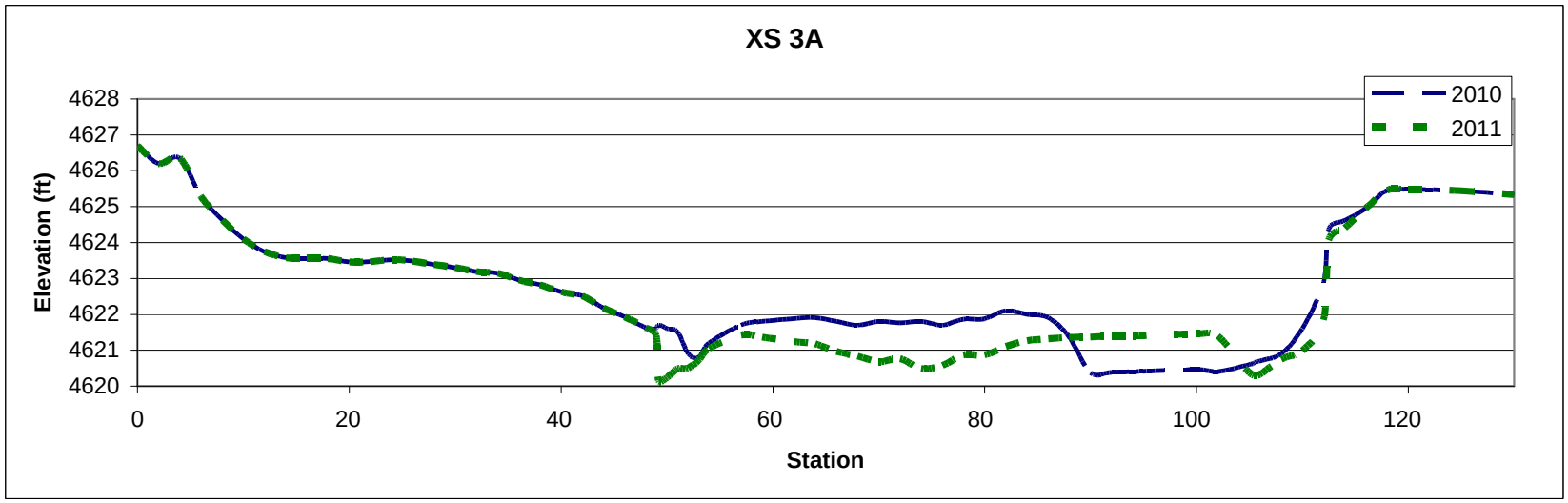

Chart 3. Cross Section data for 3-A between 2010 and 2011.

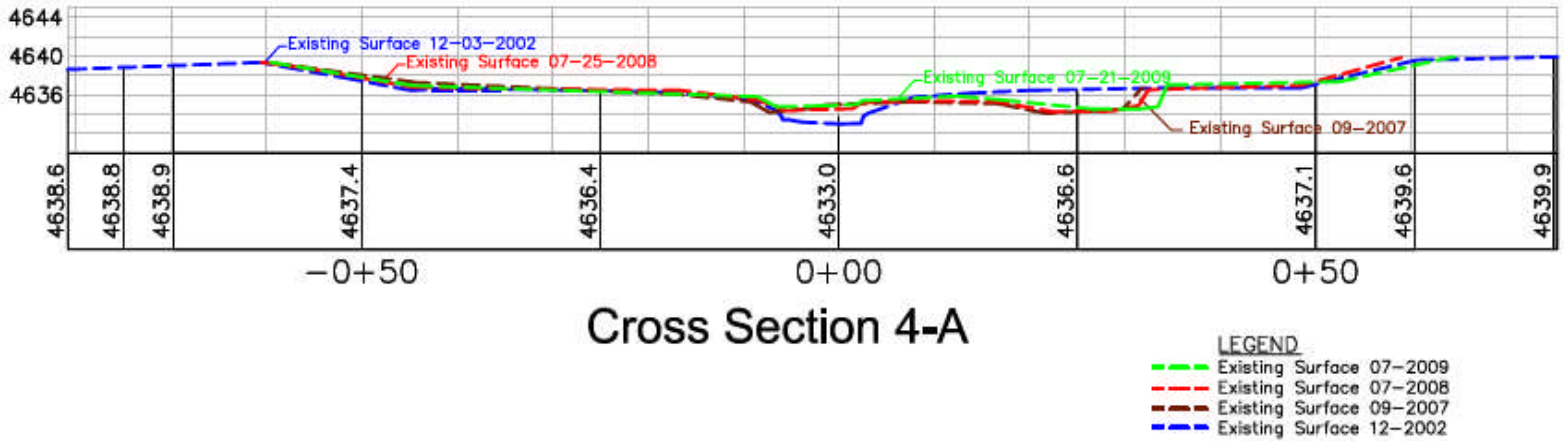

Chart 4. Cross Section data for 4-A between 2002 and 2009.

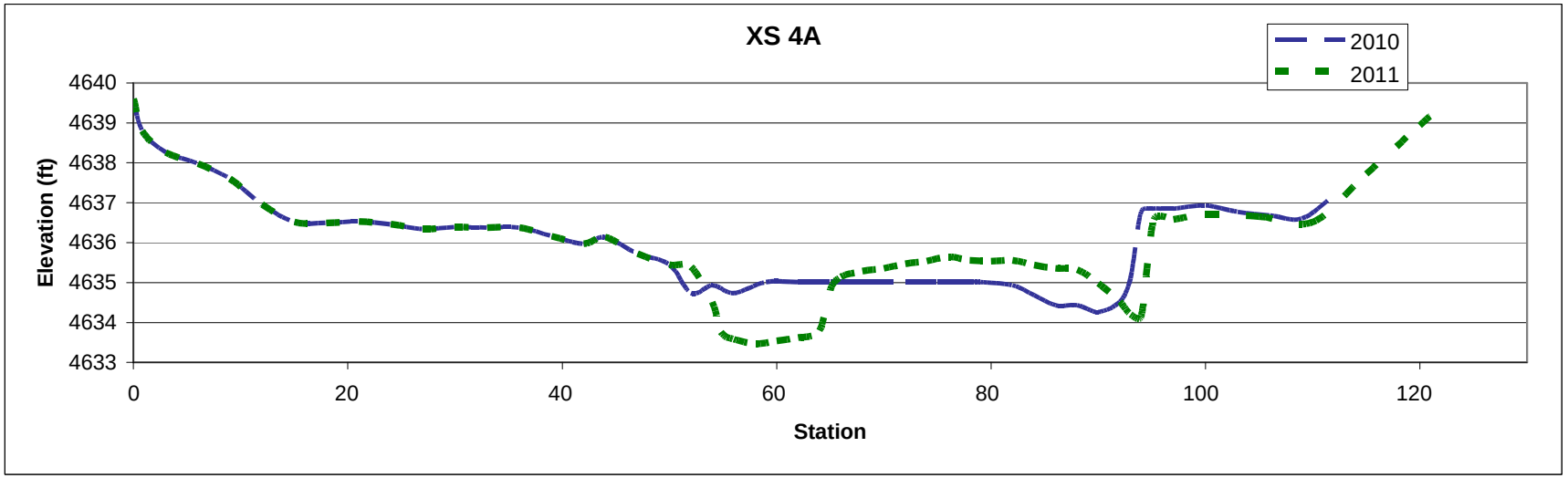

Chart 5. Cross Section data for 4-A between 2010 and 2011.

Cross Section 3-A is located below the Praine Creek confluence and shown in photos on pages C-11 and C-12 (Appendix C). Annual flows in Camp Creek increased significantly during the 2008 and 2009 seasonal runoffs, which contributed to channel and bank movement at this cross section location. The left bank was stable from 2007 to 2009. Sand and gravel deposition increased slightly in the middle of the channel bottom through this period. The right bank shifted east notably in 2009. A large ponderosa pine fell into the creek upstream of the transect during the 2008 spring runoff, resulting in additional cross-sectional changes in 2009. A comparison with the 2010 data showed active deposition and the formation of a mid-channel bar that split the stream flow between the active side-channel left of the bar and the thalweg on the right bank. In 2011, a long-duration, higher than average spring runoff led to substantial channel adjustment. The inside point bar along the left bank degraded while the outside (right) bank aggraded to form a wider base-flow channel with the thalweg shifted toward the left bank.

Cross Section 4-A is located above the Praine Creek confluence. The right bank shifted to the east and the channel bottom increased slightly in depth in 2009. The 2010 survey data showed the stream reach remained relatively stable between 2009 and 2010. The 2011 survey (Chart 5) and photos (C-13 in Appendix C) showed a considerable channel adjustment at this cross section in response to the 2011 spring runoff. Sediment deposition within the channel shifted the base-flow from the right bank to the left and scoured a new thalweg along the left bank. Established willows appeared to resist some erosion and provided new undercut bank habitat for resident fish following the 2011 runoff. Natural hydrogeomorphic processes appear to be acting on the channel and do not appear to be compromising overall stream stability. The continued establishment of woody species along the stream and noted channel adjustments will likely result in long-term channel stability and replenished aquatic habitat.

3.2. Vegetation

A comprehensive list of 107 vegetation species identified on the site from 2002 to 2011 is presented in Table 1. Four wetland and two upland community types were identified and mapped at the mitigation site in 2011 (Figure 3, Appendix A). The vegetation community types included wetland Type 2 – *Carex* spp*. /Phalaris arundinacea*, upland Type 5 – *Agropyron repens/Centaurea maculosa*, wetland Type 6 – *Populus* spp*./Salix* spp., wetland Type 8 – *Phalaris arundinacea/Juncus balticus* Wetland, wetland Type 10 – *Salix* spp./*Populus* spp., and upland Type 11 – *Agropyron repens*/*Bromus* spp. Plant species observed within each of these communities are listed on the Monitoring Form (Appendix B). Open water below the ordinary high water mark (OHWM) of the stream channel was identified on Figure 3 (Appendix A) by polygon 9. The dominant species for each vegetation community type are listed in the discussion below in descending order of abundance.

Table 1. Vegetation species identified from 2002 to 2011 at the Camp Creek Wetland Mitigation Site.

Scientific Name	Common Name	Region 9 Wetland Indicator[1]
Achillea millefolium	yarrow,common	FACU
Agropyron repens	quackgrass	FACU
Agropyron spicatum	**wheatgrass,blue-bunch**	**FACU-**
Agrostis alba	redtop	FACW
Alnus incana	alder,speckled	FACW
Alopecurus pratensis	foxtail,meadow	FACW
Amelanchier alnifolia	service-berry,Saskatoon	FACU
Aster hesperius	aster,Siskiyou	OBL
Aster sp.		NL
Betula occidentalis	birch,spring	FACW
Betula pumila	birch,bog	OBL
Boehmeria cylindrica	false-nettle,small-spike	NO
Bromus inermis	smooth brome	NL
Bromus japonicus	brome,Japanese	FACU
Bromus tectorum	cheatgrass	NL
Calamagrostis canadensis	reedgrass,blue-joint	FACW+
Campanula rotundifolia	**bellflower,Scotch**	**FACU+**
Carex aquatilis	sedge,water	OBL
Carex bebbii	sedge,Bebb's	OBL
Carex crawfordii	sedge,Crawford's	FACU
Carex lanuginosa	sedge,wooly	OBL
Carex nebrascensis	sedge,Nebraska	OBL
Carex praegracilis	sedge,clustered field	FACW
Carex stipata	awlfruit sedge	NL
*Carex utriculata**	beaked sedge	OBL
Centaurea maculosa	spotted knapweed	NL
Cercocarpus ledifolius	curl-leaf mountain mahogany	NL
Chenopodium album	goosefoot,white	FAC
Chrysanthemum leucanthemum	oxeye daisy	NL
Cicuta douglasii	water-hemlock,western	OBL
Cirsium arvense	thistle,Canada	FACU+
Cirsium vulgare	thistle,bull	FACU
Cornus stolonifera	dogwood,red-osier	FACW
Crataegus douglasii	hawthorn,Douglas'	FAC
Cynogloaaum Officinale	gypsy-flower	NL
Deschampsia cespitosa	hairgrass,tufted	FACW
Elymus glaucus	wild-rye,blue	FACU
Epilobium brachycarpum	willow-herb,panicled	UPL
Epilobium ciliatum	willow-herb,hairy	FACW-
Equisetum arvense	horsetail,field	FAC
Equisetum laevigatum	scouring-rush,smooth	FACW
Festuca pratensis	fescue,meadow	FACU+
Geum macrophyllum	avens,large-leaf	FACW+

[1]Region 9 Northwest (Reed 1988).

New species identified in 2010 are show in **bold** type.

***Commonly accepted name not included on the 1988 list.

Scientific Name	Common Name	Region 9 Wetland Indicator[1]
Glyceria elata	grass,tall manna	FACW+
Glyceria grandis	American mannagrass	NL
Glyceria striata	grass,fowl manna	OBL
Gnaphalium palustre	cudweed,western marsh	FAC+
Juncus balticus	rush,Baltic	OBL
Juncus bufonius	rush,toad	FACW+
Juncus confusus	rush,Colorado	FAC
Juncus effusus	rush,soft	FACW+
Juncus ensifolius	rush,three-stamen	FACW
Juncus tenuis	**rush,slender**	**FAC**
Lactuca serriola	lettuce,prickly	FAC-
Lepidium perfoliatum	pepper-grass,clasping	FACU+
Linaria vulgaris	yellow toadflax	NL
Lonicera involucrata	honeysuckle,four-line	FAC
Lupinus wyethii	Wyeth's lupine	NL
Lychnis alba	bladder campion	NL
Matricaria matricarioides	pineapple-weed	FACU
Melilotus officinalis	sweetclover,yellow	FACU
Mentha arvensis	mint,field	FAC
Mimulus guttatus	monkey-flower,common large	OBL
Myosotis alpestris	forget-me-not,alpine	FAC-
Phalaris arundinacea	grass,reed canary	FACW
Phleum pratense	timothy	FACU
Pinus ponderosa	pine,ponderosa	FACU-
Plantago major	plantain,common	FAC+
Poa pratensis	bluegrass,Kentucky	FACU+
Polygonum amphibium	smartweed,water	OBL
Populus angustifolia	**cotton-wood,narrow-leaf**	**FACW**
Populus balsamifera	poplar,balsam	FAC
Populus deltoides	cotton-wood,eastern	FAC
Populus tremula	aspen,quaking	FAC+
*Populus tremuloides**	quaking aspen	FAC+
*Populus trichocarpa**	black cottonwood	FAC
Potamogeton filiformis	pondweed,fine-leaf	OBL
Potentilla fruticosa	cinquefoil,shrubby	FAC-
Potentilla gracilis	cinquefoil,northwest	FAC
Ranunculus aquatilis	butter-cup,white water	OBL
Ranunculus hispidus	butter-cup,bristly	NO
Ranunculus repens	butter-cup,creeping	FACW
Ranunculus sp.		**NL**
Rosa woodsii	rose,Woods	FACU
Rubus idaeus	raspberry,common red	FACU
Rumex crispus	dock,curly	FACW
Rumex sp.		**NL**

[1]Region 9 Northwest (Reed 1988).

New species identified in 2010 are show in **bold** type.

***Commonly accepted name not included on the 1988 list.

Scientific Name	Common Name	Region 9 Wetland Indicator[1]
Salix bebbiana	willow,Bebb	FACW
Salix boothii	willow,Booth's	OBL
Salix drummondiana	willow,Drummond	FACW
Salix exigua	willow,sandbar	OBL
Salix geyerana	willow,geyer	FACW+
Salix lutea	willow,yellow	OBL
Scirpus microcarpus	bulrush,small-fruit	OBL
Senecio vulgaris	groundsel,common	FACU
Sisymbrium altissimum	mustard,tall tumble	FACU-
Sium suave	water-parsnip,hemlock	OBL
Smilacina stellata	false-Solomon's-seal,starry	FAC-
Solidago canadensis	golden-rod,Canada	FACU
Symphoricarpos albus	snowberry	FACU
Tanacetum Vulgare	tansy,common	NL
Taraxacum officinale	dandelion,common	FACU
Thlaspi arvense	penny-cress,field	NI
Trifolium pratense	clover,red	FACU
Trifolium repens	clover,white	FACU+
Verbascum thapsus	common mullein	NL
Veronica americana	speedwell,American	OBL

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

Wetland Types 2 and 6 were present prior to construction of the main channel. A pre-construction wetland delineation mapped a majority of the site as emergent wetlands. Type 2 encompassed a remnant wetland historically altered by livestock grazing and riparian vegetation removal. Type 6 consisted of willow (*Salix*), dogwood (*Cornus*), aspen (*Populus*), snowberry (*Symphoricarpos*), and rose (*Rosa*) shrubs within historic dry oxbows and depressions on the Grasser property. This community has also developed within the MDT parcel since construction of the channel. Mature cottonwoods are present along the old terraces higher on the banks above the streambed.

Wetland community Type 2 was characterized by saturated to slightly drier conditions with emergent vegetation intermingled with grasses and forbs commonly found in marginal wetlands. Dominant vegetation included reed canary grass (*Phalaris arundinacea*), beaked sedge (*Carex utriculata*), Nebraska sedge (*Carex nebrascensis*), water sedge (*Carex aquatilis*), fowl manna grass (*Glyceria striata*), blue wild-rye (*Elymus glaucus*), Japanese brome (*Bromus japonicus*), quackgrass (*Agropyron repens*), and spotted knapweed (*Centaurea maculosa*). Fourteen other species were inventoried within this community with covers of five percent or less.

The upland community Type 5 – *Agropyron repens/Centaurea maculosa* was located in the southwest corner of the MDT property and in isolated upland segments adjacent to the creek corridor on the Grasser property. The community was dominated by quackgrass, spotted knapweed, smooth brome,

and Japanese brome. Other species characterized within this community at lower cover classes include common yarrow (*Achillea millefolium*), meadow foxtail, shrubby cinquefoil (*Potentilla fruticosa*), northwest cinquefoil (*Potentilla gracilis*), Woods rose (*Rosa woodsii*), tall tumble mustard (*Sisymbrium altissimum*), and six other species.

The wetland community Type 6 – *Populus spp./Salix* spp. was characterized by a remnant wetland with a woody overstory situated along the upper reach of Camp Creek on the Grasser parcel and an isolated community on the MDT parcel. The dominant species were black cottonwood (*Populus trichocarpa*), quaking aspen (*Populus tremuloides*), Wood's rose (*Rosa woodsii*), Geyer willow (*Salix geyerana*), Bebb willow (*Salix bebbiana*), and sandbar willow (*Salix exigua*).

The wetland community Type 8 – *Phalaris arundinacea/Juncus balticus* community was defined in the large wetland swale east of the creek and hydrologically connected to Camp Creek during periods of high flow. During the 2011 survey, inundation and saturated soils were present throughout the Type 8 community. This community had previously been mapped as Type 2 and was mapped as Type 8 in 2011 as a result of to the proliferation of reed canary grass, a decrease of sedges, and an increase in Baltic rush (*Juncus balticus*). Reed canary grass was the dominant species, with Baltic rush, creeping foxtail, and twenty-three other species identified within the swale.

Polygon 9 was characterized by open water (Camp Creek) below the ordinary high water mark (OHWM) of the channel. The area was considered a jurisdictional water of the US.

Wetland community Type 10 – *Salix* spp./*Populus* spp. has established along the restored floodplain of Camp Creek in response to revegetation efforts following construction in 2002. Numerous containerized shrub and tree species (2002) and sprigs of willows (2008) were planted along Camp Creek. Since that time, continued success of this planted woody vegetation, along with natural recruitment of additional woody species, has resulted in a shift of dominance vs the previous Agrostis/Deschampsia community type, which has been declining in prevalence since at least 2009. Dominant species include Bebb willow, sandbar willow, Booth's willow (*Salix boothii*), yellow willow (*Salix lutea*), black cottonwood, redtop (*Agrostis alba*), speckled alder (*Alnus incana*), tufted hairgrass (*Deschampsia cespitosa*), and a diversity of sedges. A total of forty-six species, predominantly hydrophytes, were identified in this wetland community.

The 2010 upland community Type 1- *Agropyron repens*/*Trifolium* spp. was reclassified as upland Type 11 – *Agropyron repens*/*Bromus* spp based on the increase in cover of brome. Quackgrass, smooth brome, cheatgrass (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), meadow fescue (*Festuca pratensis*), white clover (*Trifolium repens*), Kentucky bluegrass (*Poa pratesis*), timothy (*Phleum pretense*), and seventeen other species were inventoried within

this upland community. Uplands within the Camp Creek mitigation area were planted with several upland species, including Ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), snowberry (*Symphoricarpos albus*), Woods rose (*Rosa woodsii*), shrubby cinquefoil (*Potentilla fruticosa*), and Saskatoon service-berry (*Amelanchier alnifolia*).

Vegetation transect results are detailed on the Monitoring Form (Appendix B) and summarized from 2002 to 2011 in tabular and graphic formats (Table 2, Charts 2 and 3, respectively). Photos of the transect endpoints are shown on page C-1 of Appendix C. The transect intersected wetland communities Types 8 and 10, upland community Type 11 and Camp Creek (polygon 9). Hydrophytic species dominated 39 percent of the transect, a decrease of one percent from 2010 and 21 percent from 2009. This decrease in wetland habitat along the transect was also reflected in the decrease of wetland habitat delineated site wide in 2011. A total of forty-four species were identified along the 471 foot transect and included 27 hydrophytic species and 17 upland species. The diversity of wetland plants established within the riparian corridor along the creek from station 240 to 290 contributed to the high number of hydrophytes observed along this transect.

Table 2. Data summary of Transect 1 from 2002 to 2011 at the Camp Creek Wetland Mitigation Site.

Monitoring Year	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Transect Length (feet)	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**
Vegetation Community Transitions along Transect	4	4	4	4	4	4	4	4	6	6
Vegetation Communities along Transect	3	3	3	3	3	3	3	3	3	3
Hydrophytic Vegetation Communities along Transect	2	2	2	2	2	2	2	2	2	2
Total Vegetative Species	28	27	30	31	31	37	34	36	46	44
Total Hydrophytic Species	15	16	17	17	17	17	20	21	30	27
Total Upland Species	13	11	13	14	14	20	14	15	16	17
Estimated % Total Vegetative Cover	85	95	86	84	84	88	87	87	85	95
% Transect Length Comprised of Hydrophytic Vegetation Communities	59	59	59	60	60	60	60	60	40	39
% Transect Length Comprised of Upland Vegetation Communities	37	37	37	36	36	36	36	36	53	55
% Transect Length Comprised of Unvegetated Open Water	4	4	4	4	4	4	4	4	7	6
% Transect Length Comprised of Bare Substrate	0	0	0	0	0	0	0	0	0	0

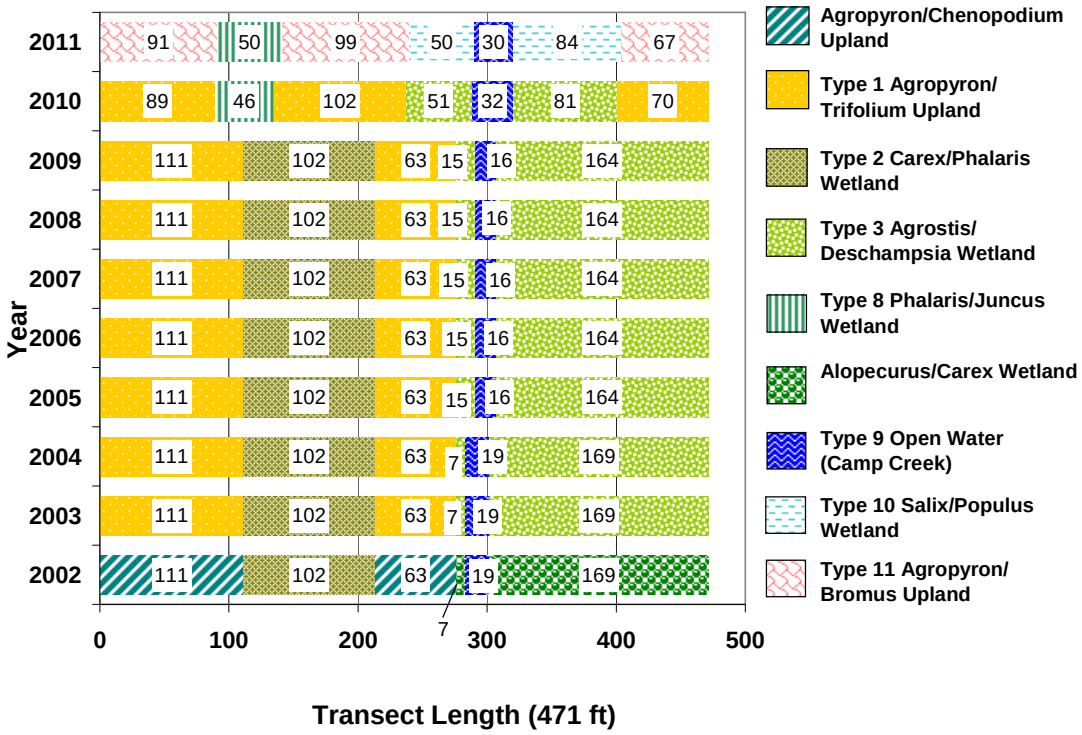

Chart 6. Transect 1 maps showing vegetation types from transect start (0 feet) to finish (471 feet) from 2002 to 2011.

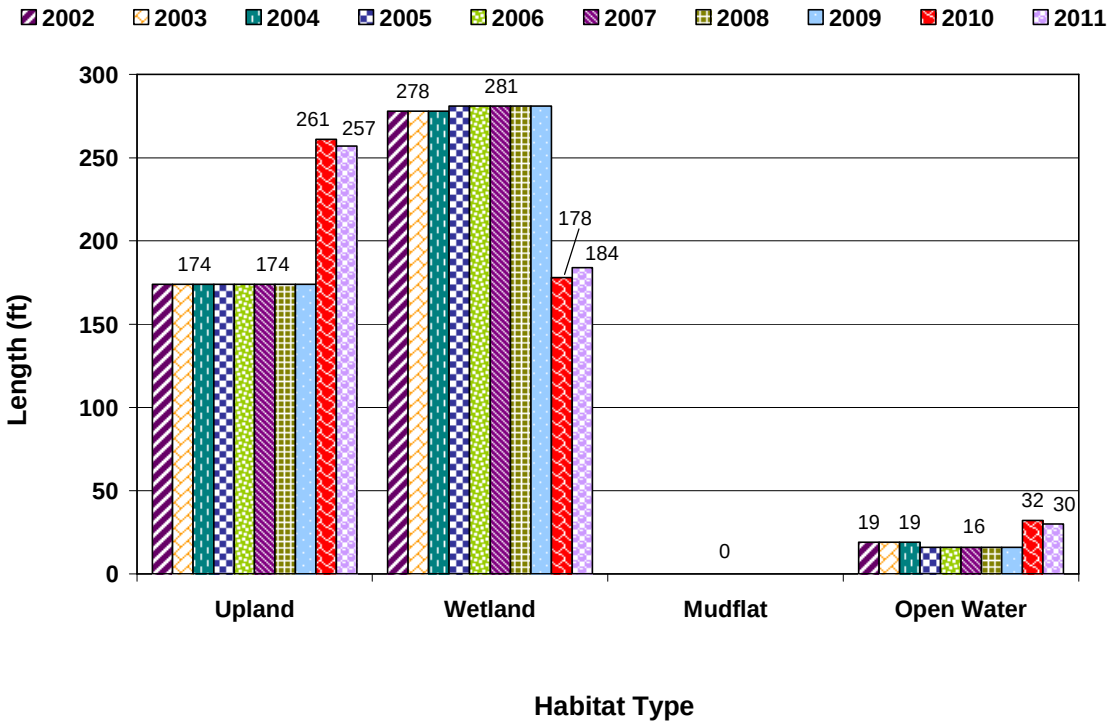

Chart 7. Length of vegetation communities within Transect 1 from 2002 to 2011.

Infestations of spotted knapweed, ox-eye daisy (*Chrysanthemum leucanthemum*), and Canada thistle, Priority 2B noxious weeds, were identified and mapped in 2011 (Figure 3, Appendix A; Monitoring Form, Appendix B). In addition to community 5 dominated by spotted knapweed, twelve infestations of spotted knapweed were identified and ranged in size from less that 0.1 acre up to 1.0 acre in size. The cover class of spotted knapweed within these infestations ranged from low (1 to 5 percent cover) to high (25 to 100 percent cover). A majority of the spotted knapweed was observed in the upland periphery of the site. Spotted knapweed was prevalent surrounding the Camp Creek project area and may continue to be a problem within the mitigation site without significant weed control efforts by the USFS. The cover of spotted knapweed within the stream corridor on the MDT parcel decreased between 2009 and 2011 in response to weed-spraying efforts. Canada thistle (*Cirsium arvense*) was mapped at six locations in 2011. The size of the infestations were less than 0.1 acre and the cover class ranged from low (1 to 5 percent cover) to high (25 to 100 percent cover). The prevalence of Canada thistle continued to decrease between 2010 and 2011, a positive indication for weed-control efforts at this site. Ox-eye daisy was mapped in communities 2, 5, and 10 in areas less than 0.1 acre in size and at a cover class from 1 to 5 percent. This species did not show a substantial reduction between 2010 and 2011 following herbicide application.

The streambanks and floodplain margins were revegetated during the 2002 construction season and again in 2008 when 120 willows cuttings were planted on several banks. The streambanks were seeded with a grass mix developed by MDT and 20,480 willow cuttings were sprigged through the fabric. One- and five-gallon containerized shrubs and trees and willow cuttings were planted in 2002. Woody species included cottonwood, willows, dogwood (*Cornus stolonifera*), and quaking aspen. Upland slopes were planted with Douglas-fir, lodgepole pine (*Pinus contorta*), ponderosa pine, serviceberry, shrubby potentilla, common snowberry, and Wood's rose. Five exposed banks were planted with 120 willow cuttings during spring 2008 to promote stability.

The 2011 survival rates within the upland areas were similar to those observed during the 2004 to 2010 monitoring. Survival data recorded from 2004 to present show most upland species had a low survival rate. Upland species that have survived include Wood's rose, common snowberry, shrubby potentilla and red-osier dogwood. The majority of Douglas-fir plantings died after the first year. Wetland species planted along the streambank and floodplain margins had a much better survival rate than the upland species. The vigorous growth of the woody species planted on the streambanks was apparent in 2011 and led to the renaming of the riparian vegetation community as willows, cottonwoods, and alders increased in dominance. The development of the riparian shrub canopy has improved the quality of the aquatic hiding, nesting, and thermal cover for fish within Camp Creek. The willow sprigs planted during 2002 continue to increase in size and density each growing season.

3.3. Soil

The bulk of the mitigation site was mapped within the Beehive-Jeru-Jurvannah families, complex. These soils are rocky and somewhat poorly drained. The map unit is listed on the Montana hydric soils list and taxonomically classified as Typic Cyaquents/Dystrocryepts. A small upland area along the eastern boundary of the mitigation site was mapped in the Lolo series. This gravelly loam is classified as a frigid Pachic Haplustolls and is not listed as a hydric soil.

Soil test pits were excavated at six data points located within the wetland swale east of the Camp Creek corridor. Data points CC1w, CC-2w, and CC-3w met the wetland criteria. With the exception of CC-1u, all test pits met the criteria for hydric soils. The soil profile at CC-1u revealed a dark grayish brown (10YR 4/2) friable silt/sandy loam with no hydric indicators. The diagnostic horizon (5-10 inches) in pit CC-1w displayed a black (10YR 2/1) silty clay loam with five percent dark yellowish brown (10YR 4/6) redoximorphic concentrations. The silty clay grayish brown (10YR 5/2) matrix with five percent dark yellowish brown redoximorphic concentrations provided a positive indication for hydric soil at test pit CC-2u. A very similar profile was observed in test pit CC-2w. A dark grayish brown (10YR 4/2) clay loam with five percent yellowish red (5YR 4/6) concentrations met the hydric criteria at CC-3u. Soil at CC-3w had redoximorphic concentrations (ten percent) and reflected the fluctuating water table that characterized the wetland hydrology present at this point. The test pits generally confirmed the mapped complex.

3.4. Wetland Delineation

The wetlands delineated in 2011 are mapped on Figure 3 in Appendix A. The 2011 delineation identified 37.50 acres of aquatic and wetland habitat within the Camp Creek wetland mitigation site (Table 3). Approximately 47.23 wetland acres and 1.5 open water channel acres were identified within the monitoring area in 2000 prior to project implementation. A steady decrease in wetland acreage has been documented from 2007 to present and may be attributed to changes in irrigation practices since the reconstruction of the creek. The area in the southeast corner located upgradient and east of the flood channel historically received hydrological inputs from flood irrigation on the Grasser parcel. The area upstream of the Andrews Creek inlet is located on the terrace above Camp Creek and the associated floodplain. These areas historically were flooded or saturated from irrigation practices. Wetlands identified within the site in 2011 were associated with the riparian corridor along Camp Creek and the low-lying swale east of the Creek. The wetland acreage within these areas is not expected to decrease further, based on the premise that current hydrologic conditions are not influenced by irrigation practices.

Table 3. Summary of aquatic habitat acreages in 2000 (baseline) and from 2007 to 2011 at the Camp Creek Wetland Mitigation Site.

HABITAT	ACREAGES											
	2000 MDT Parcel	2000 Grasser Parcel	2007 MDT Parcel	2007 Grasser Parcel	2008 MDT Parcel	2008 Grasser Parcel	2009 MDT Parcel	2009 Grasser Parcel	2010 MDT Parcel	2010 Grasser Parcel	2011 MDT Parcel	2011 Grasser Parcel
Wetland Area	42.61	4.62	34.84	6.93	32.44	6.93	32.33	6.93	31.51	6.22	27.26	6.92
Open Water Area	0.75	0.75	0.95	1.20	0.95	1.20	0.95	1.20	1.28	2.03	1.28	2.04
SUBTOTAL	43.36	5.37	35.79	8.13	33.39	8.13	33.28	8.13	32.79	8.25	28.54	8.96
Aquatic Habitat Total	**48.73**		**43.92**		**41.52**		**41.41**		**41.04**		**37.50**	

3.5. Wildlife

A comprehensive list of fish and wildlife species observed directly or indirectly at the site from 2002 to 2011 is presented in Table 4 (Monitoring Forms, Appendix B). Birds identified in 2011 included the American robin (*Turdus migratorius*), barn swallow (*Hirundo rustica*), Clark's nutcracker (*Nucifraga Columbiana*), common raven (*Corvus corax*), common starling (*Sturnus vulgaris*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), red-winged blackbird (*Agelaius phoeniceus*), tree swallow (*Tachycineta bicolor*), and yellow warbler (*Dendroica petechia*). A badger burrow, signs of porcupine foraging, Richardson's ground squirrel, and white-tailed deer were observed during the 2011 survey.

Table 4. Wildlife species observed at the Camp Creek Mitigation Site from 2002 to 2011.

COMMON NAMES	SCIENTIFIC NAMES
AMPHIBIAN	
Columbia Spotted Frog	*Rana luteiventris*
BIRD	
American Crow	*Corvus brachyrhynchos*
American Dipper	*Cinclus mexicanus*
American Goldfinch	*Spinus tristus*
American Kestrel	*Falco sparverius*
American Robin	***Turdus migratorius***
Bald Eagle	*Haliaeetus leucocephalus*
Barn Swallow	***Hirundo rustica***
Black-billed Magpie	*Pica hudsonia*
Brewer's Blackbird	*Euphagus cyanocephalus*
Brown-headed Cowbird	*Molothrus ater*
Canada Goose	*Branta canadensis*

Species identified in 2011 are listed in **bold** type

Table 4 (continued). Wildlife species observed at the Camp Creek Mitigation Site from 2002 to 2011.

COMMON NAMES	SCIENTIFIC NAMES
BIRD	
Cedar Waxwing	*Bombycilla cedrorum*
Clark's Nutcracker	***Nucifraga columbiana***
Common Merganser	*Mergus merganser*
Common Nighthawk	*Chordeiles minor*
Common Raven	***Corvus corax***
Common Starling	***Sturnus vulgaris***
Common Yellowthroat	*Geothlypis trichas*
Dusky Grouse	*Dendragapus obscurus*
European Starling	*Sturnus vulgaris*
Grasshopper Sparrow	*Ammodramus savannarum*
Great Blue Heron	*Ardea herodias*
Killdeer	*Charadrius vociferus*
Mallard	*Anas platyrhynchos*
Mountain Bluebird	*Sialia currucoides*
Northern Flicker	*Colaptes auratus*
Northern Harrier	***Circus cyaneus***
Red-tailed Hawk	***Buteo jamaicensis***
Red-winged Blackbird	***Agelaius phoeniceus***
Tree Swallow	***Tachycineta bicolor***
Spotted Sandpiper	*Actitis macularius*
Unknown Flycatcher	
Wilson's Snipe	*Gallinago delicata*
Yellow Warbler	***Dendroica petechia***
FISH	
Brook Trout	*Salvelinus fontinalis*
Brown Trout	*Salmo trutta*
CutthroatXRainbow Trout	
Westslope Cutthroat Trout	*Oncorhynchus clarkii lewisi*

Species identified in 2011 are listed in **bold** type

Table 4 (continued). Wildlife species observed at the Camp Creek Mitigation Site from 2002 to 2011.

MAMMAL	
Badger	***Taxidea taxus***
Bobcat	*Lynx rufus*
Coyote	*Canis latrans*
Deer Mouse	*Peromyscus maniculatus*
Elk or Wapiti	*Cervus canadensis*
Meadow Vole	*Microtus pennsylvanicus*
Moose	*Alces americanus*
Mule Deer	*Odocoileus hemionus*
Porcupine	***Erethizon dorsatum***
Red Fox	*Vulpes vulpes*
Richardson's Ground Squirrel	***Spermophilus richardsonii***
White-tailed Deer	***Odocoileus virginianus***
REPTILE	
Common Gartersnake	*Thamnophis sirtalis*

Species identified in 2011 are listed in **bold** type

Pre-project and post-project fish surveys along Camp Creek on the MDT parcel were conducted by Montana Fish Wildlife and Parks (MFWP) during 1999, 2003, 2004 to 2007, and 2009. The constructed channel provides habitat for several fish species including Westslope cutthroat (*Oncorhynchus clarkia lewisi*), hybrid cutthroat and rainbow trout, brook trout (*Salvelinus foninalis*), and brown trout (*Salmo trutta*) (Table 4). The 2007 survey documented 297 Westslope cutthroat crosses with rainbow trout ranging in size from 3 to 9 inches. No fisheries data were collected during the 2008 monitoring season. The 2009 survey documented 344 westslope cutthroat crosses with rainbow trout in the 3- to 9^{+}-inch size range.

3.6. Functional Assessment

The 2011 functional assessment used the 1999 MDT Montana Wetland Assessment Method (Berglund 1999) on two assessment areas, the MDT parcel and the Grasser parcel (Table 5). This was consistent with the 2009 and 2010 assessments.

The 2001 baseline assessment was completed by Turnstone Biological. They separated the Grasser property into three assessment areas, emergent (Type I), scrub-shrub emergent (Type II), and rock bottom with narrow mixed wetland fringe (Type III) wetland classifications. This AA was later modified to encompass the entire Grasser parcel.

Table 5. Summary of 2001 (baseline) and 2009 to 2011 wetland function/value ratings and functional points at the Camp Creek Wetland Mitigation Site.

Function and Value Parameters from the 1999[1] MDT Montana Wetland Assessment Method	2001 Type I, MDT Parcel	2001 Type III, MDT Parcel	2001 Type I, Grasser Parcel	2001 Type II, Grasser Parcel	2001 Type III, Grasser Parcel	2009 Grasser Parcel	2009 MDT Parcel	2010 Grasser Parcel	2010 MDT Parcel	2011 Grasser Parcel	2011 MDT Parcel
Listed/Proposed T&E Species Habitat	Mod (0.8)	Mod (0.8)	Mod (0.8)	Mod (0.8)	Mod (0.8)	Mod (0.8)	Mod (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	Low (0.1)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
General Wildlife Habitat	Low (0.3)	Mod (0.5)	Low (0.3)	Mod (0.5)	Mod (0.5)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	Low (0.1)	Mod (0.5)	Low (0.1)	Low (0.1)	Mod (0.5)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)	Exel (1.0)
Flood Attenuation	Mod (0.6)	Mod (0.4)	Mod (0.6)	Mod (0.5)	Mod (0.4)	Mod (0.4)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
Short and Long Term Surface Water Storage	Low (0.3)	High (0.8)	Low (0.3)	Low (0.3)	High (0.8)	Mod (0.6)	High (1.0)	Mod (0.6)	High (1.0)	Mod (0.6)	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	Mod (0.6)	Mod (0.7)	Mod (0.7)	Mod (0.6)	Mod (0.6)	High (0.9)	Mod (0.6)	High (0.9)	High (0.9)	High (0.9)
Sediment/Shoreline Stabilization	Low (0.2)	Low (0.3)	Low (0.2)	Mod (0.6)	Low (0.3)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Production Export/Food Chain Support	Mod (0.7)	High (0.9)	Mod (0.7)	Mod (0.7)	High (0.9)	High (0.9)	High (0.9)	High (1.0)	High (0.9)	High (1.0)	High (0.9)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Low (0.1)	Low (0.2)	Low (0.1)	Low (0.3)	Low (0.2)	Low (0.2)	Mod (0.4)	Mod (0.5)	Mod (0.4)	Mod (0.5)	Mod (0.4)
Recreation/Education Potential	Low (0.2)	Low (0.1)	Low (0.2)	Low (0.3)	Low (0.1)	Low (0.3)	High (1.0)	Low (0.3)	High (1.0)	Low (0.3)	High (1.0)
Actual Points / Possible Points	**5.1 / 12**	**6.1 / 12**	**5.1 / 12**	**5.9 / 12**	**6.2 / 12**	**8.2 / 12**	**10 / 12**	**8.2 / 12**	**10 / 12**	**9.1 / 12**	**10.1 / 12**
% of Possible Score Achieved	**42%**	**52%**	**42%**	**49%**	**52%**	**68%**	**83%**	**73%**	**83%**	**76%**	**84%**
Overall Category	**III**	**III**	**III**	**III**	**III**	**II**	**I**	**II**	**I**	**II**	**I**
Total Acreage of Assessed Wetlands and Open Water within Easement	**42.3**	**1.062**	**3.512**	**0.502**	**1.362**	**8.13**	**33.28**	**8.25**	**32.79**	**8.25**	**29.25**
Functional Units (fu) (acreage x actual points)	**215.73**	**6.57**	**17.90**	**2.95**	**8.43**	**66.66**	**332.80**	**67.65**	**327.90**	**75.08**	**295.43**
Functional Unit Gain to Date by Ownership	NA	NA	NA	NA	NA	**37.38**	**110.5**	**38.37**	**105.6**	**45.8**	**73.13**
Total Functional Unit Gain	NA	NA	NA	NA	NA	**147.88**		**143.97**		**118.93**	

[1](Berglund 1999).

The AA on the MDT parcel was rated as a Category I wetland with 84 percent of the total points possible, a slight increase from the 2009 and 2010 score (Wetland Assessment Form, Appendix B). The rating increased from high to excellent for general fish/aquatic habitat based on the continued development of the woody riparian cover along the stream. Ratings were high for the listed/proposed threatened and endangered (T&E) species habitat, Montana Natural Heritage Program (MTNHP) species habitat, surface water storage, sediment/nutrient/toxicant removal, sediment/shoreline stabilization, production export/food chain support, groundwater discharge/recharge, and recreation/education ratings (public ownership with excellent access). Acreages for the MDT AA decreased in 2011 as a result of the conversion of historically irrigated wetlands to uplands.

The MFWP decided to classify Westslope cutthroat trout captured during surveys in 2006 as Westslope cutthroat / rainbow trout hybrids because they could not be differentiated in the field. These were the same species that had been captured during 2003 to 2005 surveys. Consequently, the "suspected primary habitat" rather than "documented primary habitat" MTNHP species habitat ranking for Westslope cutthroat trout was conservatively assigned.

The AA on the Grasser parcel is not within a conservation easement and, therefore, is subject to a higher degree of disturbance from grazing. The Grasser parcel was rated as a Category II wetland in 2011 (Wetland Assessment Form, Appendix B). The percent score increased from 73 percent in 2010 to 75 percent in 2011 as a result of point increases in the sediment/nutrient/toxicant removal category. This increase was primarily the result of increased vegetation established throughout the wetland and along the creek. The AA received high ratings for listed/proposed T&E species habitat (bull trout), general fish habitat, MTNHP species habitat (based on the suspected presence of Westslope cutthroat trout), sediment/shoreline stabilization, production export/food chain support, and groundwater discharge/recharge. Acreages of the Grasser AA were consistent between 2010 and 2011.

3.7. Photo Documentation

Representative photographs taken in 2011 from established photo and data points, transect end points, and stream cross-sections are provided in Appendix C. The 2009 through 2011 photos of the start and finish stations of the transect (PP1 and PP2) are shown on page C-1 of Appendix C. Photos and panoramas of photo points PP3 through PP13 are included on pages C-2 through C-10. The stream cross-section photos are presented on C-11 through C-13 of Appendix C. Photos of the data points are shown on C-14.

3.8. Maintenance Needs

The flood channel created by MDT to inundate the large emergent complex was examined during 2011 monitoring. Continued aggrading of the right bank along this feature suggests the structural integrity of the high-flow rock diversion structure is not imminently threatened by erosion. However, channel incisement may hinder the ability of the stream to access the flood channel. There was evidence of surface flow within the flood channel; however, it was not apparent during this year's field survey that Camp Creek flows entered the flood channel in 2011. Localized streambank erosion observed along two reaches within the Grasser parcel was mapped on Figure 3 in Appendix 1 and has resulted in channel avulsion and minor lateral migration of the corridor from the original plan form. This natural stream process does not threaten any structures or the stability of this reach.

Infestations of spotted knapweed, ox-eye daisy (*Chrysanthemum leucanthemum*), and Canada thistle, Priority 2B noxious weeds, were identified and mapped in 2011 (Figure 3, Appendix A; Monitoring Form, Appendix B). In addition to community 5 dominated by spotted knapweed, twelve infestations of spotted knapweed were identified and ranged in size from less that 0.1 acre up to 1.0 acre in size. The cover class of spotted knapweed within these infestations ranged from low (1 to 5 percent cover) to high (25 to 100 percent cover). A majority of the spotted knapweed was observed in the upland periphery of the site. Canada thistle (*Cirsium arvense*) was mapped at six locations in 2011. The size of the infestations were less than 0.1 acre and the cover class ranged from low (1 to 5 percent cover) to high (25 to 100 percent cover). Ox-eye daisy was mapped in communities 2, 5, and 10 in areas less than 0.1 acre in size and at a cover class from 1 to 5 percent. All 3 weed species were sprayed in 2010 and 2011 by a contractor to MDT and control efforts have proven effective in managing noxious weeds within the mitigation site.

3.9. Current Credit Summary

The credit allocation method for this site was determined by MDT and USACE in early 2006. The wetland acreage for each AA was multiplied by the total score for the AA to yield the overall functional unit score. The difference between the baseline and current functional units (functional unit "gain") was divided by the post-project score to arrive at an approximate credit acreage for that AA. Credit acreages from each AA were summed to arrive at the site total (Table 6). Approximately 118.93 functional units (functional points times wetland acreage) have been gained to date at the Camp Creek mitigation site. This is less than the 143.97 functional unit gain reported in 2010, owing to a 3.54 acre decrease in the total assessment acreage. The current potential credit estimate for the Camp Creek site is 12.27 acres (Table 6).

Table 6. Functional unit-based credit estimate in 2011 for the Camp Creek Mitigation Site.

Property	2001 Baseline Functional Units	2010 Wetland & Channel Acreage	2010 Functional Points	2010 Functional Units	2011 Wetland & Channel Acreage	2011 Functional Points	2011 Functional Units	Functional Unit "Gain"	"Gain" Divided by Current Score (potential credit acres)
MDT	222.30	32.79	10	327.9	29.25	10.1	295.43	73.13	7.24
Grasser	29.28	8.25	8.2	67.65	8.25	9.1	75.08	45.80	5.03
Total	**251.58**	**41.04**		**395.55**	**37.50**		**370.51**	**118.93**	**12.27**

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Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring
Camp Creek
Ravalli County, Montana

Figure 2: 2011 Monitoring Activity Locations

0 125 250 500
Feet

Match Line
PP9
PP6
XS-1A
XS-3A
CC-3W
CC-3U
Grasser
MDT
CC-2W
CC-2U
CC-1U
CC-1W
PP8
PP1
T-1, finish
PP3
PP4
PP5
T-1, start
PP2
PP7
PP11
PP12
PP10
Match Line

N

Legend

- Vegetation Transect
- Monitoring Limits
- Data Points
- Photo Points
- Cross Section

Base Photography Date: August 16, 2011

0 125 250 500
Feet

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

LOCATION: Ravalli Co., MT
PROJ NO: NH 41(24)
FILE: CampCreek/Monitor2011.mxd

Project Name
Camp Creek Wetland Mitigation

Drawing Title
2011 Monitoring Activity Locations

DRAWN BCS	CHECKED BV	APPROVED JJ	
SCALE: Noted			
Drawn: November 18, 2011			
PROJ MGR: B Sandefur			

CONFLUENCE
consulting Incorporated

Figure 2

REV -

Figure 3: 2011 Mapped Site Features

0 125 250 500
Feet

Match Line

Grasser MDT

N

Acreages

Project Area	101.58 acres
Gross Wetland Area	37.50 acres
Camp Creek (9)	3.32 acres
Upland Buffer	64.08 acres

Noxious Weeds
Chrysanthemum leucanthemum
Centaurea maculosa
Cirsium arvense
Infestation SIze
X = <0.1 acre
▲= 0.1 to 1 acre
■= 1 to 5 acre
Cover Class
T = Trace (<1% cover)
L = Low (1-5% cover)
M = Moderate (5-25% cover)
H = High (25-100% cover)

Vegetation Community Types

2 Carex spp./Phalaris arundinacea
5 Agropyron repens/Centaurea maculosa
6 Populus spp./Salix spp.
8 Phalaris arundinacea/Juncus balticus
10 Salix spp./Populus spp.
11 Agropyron repens/Bromus spp

Legend

Monitoring Limits
Wetland Limits
Vegetation Communities
Localized Bank Erosion

Base Photography Date: August 16, 2011

0 125 250 500
Feet

LOCATION: Ravalli Co., MT
PROJ NO: NH 41(24)
FILE: CampCreek/Veg2011.mxd

Project Name: Camp Creek Wetland Mitigation
Drawing Title: 2011 Mapped Site Features

DRAWN BCS | CHECKED BV | APPROVED JJ
SCALE: Noted
Drawn: November 18, 2011
PROJ MGR: B Sandefur

CONFLUENCE consulting incorporated

Figure 3

REV -

Appendix B

2011 Wetland Mitigation Site Monitoring Form
2011 USACE Wetland Delineation Form
2011 MDT Functional Assessment Form

MDT Wetland Mitigation Monitoring
Camp Creek
Ravalli County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Camp Creek Assessment Date/Time 8/2/2011 8:39:12 AM

Person(s) conducting the assessment: B. Sandefur, L. Soderquist

Weather: Warm, partly cloud w/ showers Location: Sula Valley

MDT District: Lower Clark Fork Milepost:

Legal Description: T 1N R 19W Section(s) 22, 27 & 34

Initial Evaluation Date: 9/5/2002 Monitoring Year: 9 #Visits in Year: 1

Size of Evaluation Area: 101.6 (acres)

Land use surrounding wetland:

Residential, agriculture (livestock), Sula Ranger Station, & national forest w/ spotted knapweed problem

HYDROLOGY

Surface Water Source: CampCreek

Inundation: ☑ Average Depth: 0.5 **(ft)** Range of Depths: 0-1.5 **(ft)**

Percent of assessment area under inundation: 10 %

Depth at emergent vegetation-open water boundary: 0.2 **(ft)**

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

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

Water stained leaves through flood swale drainage pattern to the east of Camp Creek. Drift lines and debris movement within floodplain of Camp Creek. Eroding banks and channel migration.

Groundwater Monitoring Wells

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

Well ID	Water Surface Depth (ft)
No wells	

Additional Activities Checklist:

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

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

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

Hydrology Notes:

Hydrology at this site comes from Camp Creek, Praine Creek, and Andrews Creek. Also likely to have groundwater recharge from forested slopes to east of site. Areas of inundation primarily restricted to open channels. Saturation observed within lower topography east of creek.

VEGETATION COMMUNITIES

Site Camp Creek

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

* Indicates accepted spp name not on '88 list.

Community # 2 **Community Type:** Carex spp. / Phalaris arundinacea **Acres** 3.71

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	2
Bromus japonicus	2	Carex aquatilis	1
Carex nebrascensis	2	Carex utriculata*	3
Centaurea maculosa	2	Chrysanthemum leucanthe	1
Cirsium arvense	1	Deschampsia cespitosa	0
Elymus glaucus	2	Equisetum arvense	1
Festuca pratensis	1	Glyceria striata	2
Juncus ensifolius	0	Juncus tenuis	0
Phalaris arundinacea	4	Potentilla fruticosa	1
Rumex crispus	0	Sisymbrium altissimum	1
Thlaspi arvense	1	Trifolium repens	1
Verbascum thapsus	1		

Comments:

Community # 5 **Community Type:** Agropyron repens / Centaurea maculosa **Acres** 4.15

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	3
Alopecurus pratensis	1	Aster spp.	1
Bromus inermis	2	Bromus japonicus	2
Centaurea maculosa	3	Chrysanthemum leucanthe	1
Lychnis alba	0	Pinus ponderosa	0
Potentilla fruticosa	1	Potentilla gracilis	1
Rosa woodsii	1	Sisymbrium altissimum	1
Thlaspi arvense	1	Verbascum thapsus	1

Comments:

Community # 6 **Community Type:** Populus spp. / Salix spp. **Acres** 3.04

Species	Cover class	Species	Cover class
Cornus stolonifera	0	Populus tremuloides*	2
Populus trichocarpa*	5	Rosa woodsii	2
Salix bebbiana	2	Salix drummondiana	1
Salix exigua	1	Salix geyerana	2
Symphoricarpos albus	0		

Comments:

Community # 8 **Community Type:** Phalaris arundinacea / Juncus balticus **Acres** 15.03

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis alba	1
Alopecurus pratensis	2	Bromus inermis	2
Carex nebrascensis	0	Carex praegracilis	1
Carex utriculata*	1	Centaurea maculosa	1
Cirsium arvense	1	Deschampsia cespitosa	0
Epilobium ciliatum	1	Geum macrophyllum	0
Juncus balticus	3	Mentha arvensis	1
Phalaris arundinacea	5	Populus tremuloides*	0
Potentilla gracilis	1	Rosa woodsii	0
Rumex crispus	1	Salix exigua	1
Salix lutea	0	Scirpus microcarpus	1
Sisymbrium altissimum	0	Solidago canadensis	1
Thlaspi arvense	1		

Comments:

Community # 9 **Community Type:** Open Water / **Acres** 3.32

Species	Cover class	Species	Cover class
Open water	5		

Comments:

Community # 10 **Community Type:** Salix spp. / Populus spp. **Acres** 12.4

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	0
Agrostis alba	3	Alnus incana	2
Aster hesperius	0	Carex aquatilis	0
Carex crawfordii	0	Carex nebrascensis	1
Carex praegracilis	2	Carex utriculata*	2
Centaurea maculosa	2	Chrysanthemum leucanthe	1
Cicuta douglasii	1	Cirsium arvense	0
Deschampsia cespitosa	2	Equisetum arvense	0
Festuca pratensis	0	Geum macrophyllum	0
Juncus balticus	1	Juncus effusus	0
Juncus ensifolius	0	Juncus tenuis	1
Lupinus wyethii	1	Mentha arvensis	0
Mimulus guttatus	0	Myosotis alpestris	0
Phalaris arundinacea	2	Phleum pratense	1
Populus angustifolia	0	Populus balsamifera	1
Populus deltoides	2	Populus tremuloides*	1
Potamogeton filiformis	0	Potentilla fruticosa	1
Potentilla gracilis	0	Ranunculus sp.	0
Rumex crispus	0	Salix bebbiana	2
Salix boothii	2	Salix exigua	2
Salix lutea	2	Scirpus microcarpus	1
Sium suave	0	Solidago canadensis	1
Trifolium pratense	0	Trifolium repens	0

Comments:

Community # 11 **Community Type:** Agropyron repens / Bromus spp. **Acres** 59.52

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	4
Agropyron spicatum	0	Alopecurus pratensis	1
Bromus inermis	3	Bromus japonicus	2
Bromus tectorum	2	Campanula rotundifolia	0
Centaurea maculosa	2	Cirsium vulgare	0
Festuca pratensis	2	Juncus balticus	0
Lepidium perfoliatum	1	Phalaris arundinacea	0
Phleum pratense	2	Poa pratensis	2
Potentilla fruticosa	1	Potentilla gracilis	1
Rumex crispus	0	Sisymbrium altissimum	1
Solidago canadensis	1	Thlaspi arvense	1
Trifolium pratense	1	Trifolium repens	1
Verbascum thapsus	1		

Comments:

Total Vegetation Community Acreage **101.17**

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

VEGETATION TRANSECTS

Site: Camp Creek Date: 8/2/2011 8:39:12 AM

Transect Number: 1 **Compass Direction from Start:** 180

Interval Data:

Ending Station 91 **Community Type:** Agropyron repens / Bromus spp.

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	3
Alopecurus pratensis	2	Bromus inermis	1
Bromus tectorum	0	Centaurea maculosa	2
Phalaris arundinacea	1	Potentilla fruticosa	1
Potentilla gracilis	0		

Ending Station 141 **Community Type:** Phalaris arundinacea / Juncus balticus

Species	Cover class	Species	Cover class
Carex nebrascensis	2	Carex praegracilis	1
Cirsium arvense	1	Deschampsia cespitosa	0
Geum macrophyllum	0	Juncus balticus	2
Phalaris arundinacea	5	Rumex crispus	0
Salix exigua	1	Salix lutea	1
Sisymbrium altissimum	1	Thlaspi arvense	0

Ending Station 240 **Community Type:** Agropyron repens / Bromus spp.

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agropyron repens	3
Alopecurus pratensis	2	Bromus inermis	2
Bromus tectorum	0	Carex nebrascensis	0
Centaurea maculosa	1	Cirsium arvense	1
Deschampsia cespitosa	1	Juncus balticus	1
Lepidium perfoliatum	1		

Ending Station 290 **Community Type:** Salix spp. / Populus spp.

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	0
Agrostis alba	2	Alnus incana	2
Aster hesperius	1	Carex aquatilis	1
Carex praegracilis	2	Carex utriculata*	2
Chrysanthemum leucanthe	0	Cicuta douglasii	2
Cirsium arvense	0	Deschampsia cespitosa	2
Equisetum arvense	1	Juncus ensifolius	1
Mentha arvensis	1	Myosotis alpestris	0
Phalaris arundinacea	3	Potentilla gracilis	0
Rumex sp.	1	Salix bebbiana	2
Salix exigua	2	Salix lutea	2
Salix lutea	2	Scirpus microcarpus	1
Sium suave	0	Trifolium pratense	0

Ending Station 320 **Community Type:** Open Water /

Species	Cover class	Species	Cover class
Open water	5		

Ending Station 404 **Community Type:** Salix spp. / Populus spp.

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis alba	3
Alnus incana	2	Aster hesperius	0
Carex aquatilis	2	Carex nebrascensis	1
Carex praegracilis	0	Chrysanthemum leucanthe	1
Juncus balticus	2	Juncus effusus	1
Juncus ensifolius	1	Phalaris arundinacea	2
Populus angustifolia	1	Populus tremuloides*	1
Potentilla gracilis	1	Salix boothii	1
Salix lutea	2	Solidago canadensis	1

Ending Station 471 **Community Type:** Agropyron repens / Bromus spp.

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agropyron repens	5
Centaurea maculosa	1	Festuca pratensis	2
Juncus balticus	1	Phleum pratense	1
Potentilla gracilis	0	Thlaspi arvense	1

Transect Notes:

PLANTED WOODY VEGETATION SURVIVAL

Camp Creek

Planting Type	#Planted	#Alive	Notes
Alnus incana	4		
Amelanchier alnifolia	4		
Betula occidentalis	6		
Cornus stolinifera	22		
Pinus ponderosa	19		
Populus tremuloides	11		
Populus trichocarpa	55		
Potentilla fruitcosa	30		
Pseudotsuga menziesii	17		A few live stems observed, several dead
Rosa woodsii	8		
Salix bebbiana			Numbers planted unknown
Salix boothii			Numbers planted unknown
Salix drummondiana			Numbers planted unknown
Salix exigua			Numbers planted unknown
Salix geyeriana			Numbers planted unknown
Salix lutea	3		
Symphoricarpos albus	17		
Willow suckers/sprouts	225		

Comments

Willow and cottonwood survival along creek and adjacent floodplain has resulted in the renaming of vegetation community as these species have increased in dominance. Additional natural recruitment of these species observed within mitigation area. Shrubby potentilla showing good survival in upland planting zones.

Camp Creek

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: Blue Bird boxes

How many? 6

Are the nesting structures being used? Yes

Do the nesting structures need repairs? No

Nesting Structure Comments:

Species	#Observed	Behavior	Habitat
American Robin	4	FO	UP
Barn Swallow	8	F, FO, L	SS, UP, WM
Clark's Nutcracker	1	FO	UP, WM
Common Raven	7	FO	UP
Northern Harrier	1	FO	SS, UP, WM
Red-tailed Hawk	1	FO	SS, UP, WM
Red-winged Blackbird	50	F, FO, L, N	SS, UP, WM
Starling	4	FO, L	UP, WM
Tree Swallow	20	F, FO, L	SS, UP, WM
Yellow Warbler	3	FO	SS

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Badger		No	No	Yes	
Porcupine		No	No	No	signs of foraging
Richardson's Ground Squirrel	2	No	No	Yes	numerous burrows
White-tailed Deer	2	Yes	Yes	No	

Wildlife Comments:

Doe and fawn

Camp Creek

PHOTOGRAPHS

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

Photograph Checklist:

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

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

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

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

Photo #	Latitude	Longitude	Bearing	Description
8319			270	XS-3a, downstream; 8319-8321
8322			90	XS-3a, upstream; 8322-8327
8331			160	XS-4a, upstream; pano 8331-8336
8339			315	XS-4a, downstream; 8339-8342
8343			320	PP-6; 8343-8345
8348	45.807011	-113.951645	20	PP-9; 8348-8351
8353	45.803982	-113.950211	270	PP-10; 8353-8362
8367	45.798836	-113.948845	165	PP-11; 8367-8372
8373	45.798836	-113.948845	20	PP-12; 8373-8377
8378	45.796745	-113.948608	180	PP-13
8380	45.812317	-113.950333	270	PP-8; 8380-8386
8387			180	T1 start
8388	45.814461	-113.95446	0	T1 end
8388	45.814461	-113.95446	0	PP1
8389	45.814625	-113.954285	45	PP3
8390	45.814636	-113.954208	0	PP4
8391	45.815964	-113.953766	210	PP2
8397-8400	45.814014	-113.953484	270	PP5
8408	0	0	230	CC-1u
8410			240	CC-1w
8411			160	CC-2w
8412			300	CC-2u
8413			140	CC-3w
8414			120	CC-3u
8415			120	PP-7

Comments:

Camp Creek

ADDITIONAL ITEMS CHECKLIST

Hydrology

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

Photos

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

Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

Soils

☑ Assess soils

Wetland Delineations

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

Wetland Delineation Comments

Functional Assessments

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

Functional Assessment Comments:

Maintenance

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

If yes, do they need to be repaired? No

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

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

into or out of the wetland? No

If yes, are the structures in need of repair?

If yes, describe the problems below.

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

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/2/2011

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

Investigator(s): B. Sandefur | Section, Township, Range: S 27 T 1N R 19W

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

Subregion (LRR): LRR E | Lat: 45.813745 | Long: -113.951755 | Datum:

Soil Map Unit Name: Beehive-Jeru-Jervannah families complex

Do Normal Circumstances Exist on this site? Yes ☑

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

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
Point upland side of topo break approximately 20ft from data point CC-1w.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Agropyron repens	80	☑	FACU
2. Sisymbrium altissimum	5	☐	FACU-
3. Centaurea maculosa	5	☐	NO
4. Thlaspi arvense	5	☐	NI
5. Achillea millefolium	5	☐	FACU
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: CC-1u

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/4	100					Silt Loam	friable
6-14	10YR 4/2	100					Sandy Loam	

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: mixed Oxyaquic Cryofluvents

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: Point dry, no hydro indicators.

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

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/2/2011

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

Investigator(s): B. Sandefur | Section, Township, Range: S 27 T 1N R 19W

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

Subregion (LRR): LRR E | Lat: 45.81368 | Long: -113.951976666667 | Datum:

Soil Map Unit Name: Beehive-Jeru-Jervannah families complex

Do Normal Circumstances Exist on this site? Yes ☑

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

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
Point wetland side of topo break within broad drainage pattern.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Phalaris arundinacea	100	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: CC-1w

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Sandy Loam	Moist to surface
5-10	10YR 2/1	95	10YR 4/6	5	C	M	Silty Clay Loam	
10-16	10YR 3/1	95	10YR 4/4	5	C	M	Clay Loam	

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: mixed Oxyaquic Cryofluvents

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Point described as site appears to be drying after the spring recharge season.

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

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/2/2011

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

Investigator(s): B. Sandefur | Section, Township, Range: S 27 T 1N R 19W

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

Subregion (LRR): LRR E | Lat: 45.81368 | Long: -113.951976666667 | Datum:

Soil Map Unit Name: Lolo gravelly loam

Do Normal Circumstances Exist on this site? Yes ☑

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

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
Upland data point located approximately 40ft from paired wetland data point.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Phleum pratense	15	☐	FACU
2. Agropyron repens	70	☑	FACU
3. Juncus balticus	15	☐	OBL
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: CC-2u

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					Sandy Loam	
4-9	10YR 3/2	100					Silt Loam	
9-14	10YR 5/2	95	5YR 4/4	5	C	M	Silty Clay	

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: frigid Pachic Haplustolls

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: Point dry, soil very friable, no hydro indicators.

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

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/2/2011

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

Investigator(s): B. Sandefur | Section, Township, Range: S 27 T 1N R 19W

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

Subregion (LRR): LRR E | Lat: 45.81368 | Long: -113.951976666667 | Datum:

Soil Map Unit Name: Beehive-Jeru-Jervannah families complex

Do Normal Circumstances Exist on this site? Yes ☑

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

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
Point transitional into upland. Carex with minimal seed heads, likely due to drier conditions. Hydro marginal but present during spring run-off.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Phalaris arundinacea	15	☐	FACW
2. Carex aquatilis	45	☑	OBL
3. Carex nebrascensis	30	☑	OBL
4. Sisymbrium altissimum	10	☐	FACU-
5. Thlaspi arvense	5	☐	NI
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	105 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: CC-2w

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/1	100					Sandy Loam	
7-14	10YR 5/1	95	5YR 4/4	5	C	M	Silty Clay Loam	

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: mixed Oxyaquic Cryofluvents

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☑ No ☐

Remarks: Point appears to receive periodic flooding/high water table during spring runoff.

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

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/2/2011

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

Investigator(s): B. Sandefur | Section, Township, Range: S 27 T 1N R 19W

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

Subregion (LRR): LRR E | Lat: 45.81368 | Long: -113.951976666667 | Datum:

Soil Map Unit Name: Beehive-Jeru-Jervannah families complex

Do Normal Circumstances Exist on this site? Yes ☑

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

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
Point along margin of upland, veg transition along topo break. Upland data point located approximately 20ft from paired wetland data point.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Alopecurus pratensis	50	☑	FACW
2. Poa pratensis	50	☑	FACU+
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☐

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: CC-3u

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2	100					Sandy Loam	
5-10	10YR 4/2	100					Sandy Clay Loam	
10-14	10YR 4/2	95	5YR 4/6	5	C	M	Clay Loam	

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: mixed Oxyaquic Cryofluvents

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

Remarks: Dry, no hydro indicators. Elevation of point slightly higher (1ft) than data point CC-3w.

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

Project/Site: Camp Creek | City/County: Ravalli | Sampling Date: 8/2/2011

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

Investigator(s): B. Sandefur | Section, Township, Range: S 27 T 1N R 19W

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

Subregion (LRR): LRR E | Lat: 45.81368 | Long: -113.951976666667 | Datum:

Soil Map Unit Name: Beehive-Jeru-Jervannah families complex

Do Normal Circumstances Exist on this site? Yes ☑

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

Is the area a potential Problem Area? Yes ☐

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

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

Remarks:
Area receives periodic surface water during high flows in Camp Creek.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Juncus balticus	20	☐	OBL
2. Alopecurus pratensis	65	☑	FACW
3. Agrostis alba	20	☐	FACW
4. Carex aquatilis	2	☐	OBL
5. Populus deltoides	2	☐	FAC
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
	109 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Dominance Test is >50% ☑

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:
Cottonwood seedlings noted within vicinity of data point.

SOIL

Sampling Point: CC-3w

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	95	10YR 4/6	5	C	M	Silty Clay Loam	
8-15	10YR 3/1	90	10YR 4/6	10	C	M	Clay Loam	

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

Hydric Soil Indicators:

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

Taxonomy Subgroup: mixed Oxyaquic Cryofluvents

Confirm Mapped Type?: ☐

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☑ No ☐

Remarks:

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

1. Project name Camp Creek **2. MDT project#** NH 41(24) **Control#**

3. Evaluation Date 8/2/2011 **4. Evaluators** B. Sandefur, L. Soderquist **5. Wetland/Site# (s)** AA-1, MDT Property

6. Wetland Location(s): T 1N **R** 19W **Sec1** 27 & 34 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 17010205 **Watershed/County** Lower Clark Fork Watershed/Ravalli County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 29.25

Purpose of Evaluation

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

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 29.25

How assessed: Measured e.g. by GPS

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Riverine	upper perennial	Rock Bottom		Permanently flooded	5
Riverine	Palustrine	none	Emergent Wetland		seasonally flooded	55
Riverine	Palustrine	none	Scrub-Shrub Wetland		seasonally flooded	40

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions)

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

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

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

AA managed in conservation easement and has been undisturbed for several years. Prior disturbances had included clearing, grazing, and hydrologic alterations. AA with active weed control program.

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

Spotted knapweed, Canada thistle, oxeye daisy

iii. Brief descriptive summary of surrounding land use/habitat

AA located in Sula Basin and includes Camp Creek and adjacent wetlands. USFS land and private ownership surrounding AA, landuses include pasture and livestock grazing.

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)	H	M	L

Comments: A substantial increase in shrub/woody cover was noted between 2010 and 2011 as willows, alders, and cottonwoods became a dominant component of the streamside vegetation.

SECTION PERTAINING TO FUNCTION 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 basedon definition contained in instructions):

Primary or critical habitat (list species)	○ **D** ○ **S**	
Secondary habitat (list Species)	◉ **D** ○ **S**	Bull trout
Incidental habitat (list species)	○ **D** ◉ **S**	Canada lynx
No usable habitat	○ **S**	

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

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

Sources for documented use US F&WS, MFISH, MFWP records

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 basedon definition contained in instructions):

Primary or critical habitat (list species)	○ **D** ◉ **S**	West-slope cutthroat trout
Secondary habitat (list Species)	◉ **D** ○ **S**	Bald eagle
Incidental habitat (list species)	○ **D** ◉ **S**	Wolverine, flammulated owl
No usable habitat	○ **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 the function)

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use MFWP records and fish surveys and MDT observation of bald eagles

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Moderate

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

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

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

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

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

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

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

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

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

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

Comments Area adjacent to USFS property with good connectivity, valley bottom between two mnt regions and flowing water source.

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., click ☐ **(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], the Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

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

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

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

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

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

Comments Increase in aquatic habitat rating in 2011 attributed to significant increase of shrub cover along channel. Additional pools

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, check ☐ **NA** here and proceed to the 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 not outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

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

Comments: Majority of wetland within AA subject to overbank flooding into large swale with restricted outlet. USFS offices and residents downstream, adjacent parcel with MDT 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, check ☐ **NA** here and proceed to 14G.)

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

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

Comments: Water-stained leaves within swale suggest water ponding during first part of growing season.flooding from Camp Creek.

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

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])

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

Comments: Although the large wetland swale does not contain an outlet, Camp Creek through the AA is unrestricted.

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

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

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

Comments: Increase development of willow, alders, and cottonwoods along streambanks.

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	.7	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments:

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

iii. Rating: Use the information from i and ii above and the table below to arrive at [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	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments: Large slope to east of AA. Seasonal shallow water table.

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: i. Is the AA a known rec./ed. Site (•) 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 i 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	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Final Rating:

1 H

Comments: Site used for fishing and bird watching.

General Site Notes

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

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	H	.8	1	23.4
B. MT Natural Heritage Program Species Habitat	H	.8	1	23.4
C. General Wildlife Habitat	M	.7	1	20.475
D. General Fish Habitat	E	1	1	29.25
E. Flood Attenuation	M	.6	1	17.55
F. Short and Long Term Surface Water Storage	H	1	1	29.25
G. Sediment/Nutrient/Toxicant Removal	H	.9	1	26.325
H. Sediment/Shoreline Stabilization	H	1	1	29.25
I. Production Export/Food Chain Support	H	.9	1	26.325
J. Groundwater Discharge/Recharge	H	1	1	29.25
K. Uniqueness	M	.4	1	11.7
L. Recreation/Education Potential	H	1	1	29.25
Totals:		10.1	12	295.425
Percent of Possible Score		**84.17** %		

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

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

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

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

1. Project name Camp Creek **2. MDT project#** NH 41(24) **Control#**

3. Evaluation Date 8/2/2011 **4. Evaluators** B. Sandefur, L. Soderquist **5. Wetland/Site# (s)** AA-2, Grasser Property

6. Wetland Location(s): T 1N **R** 19W **Sec1** 22, 27 & 3 **T** **R** **Sec2**

Approx Stationing or Mileposts

Watershed 17010205 **Watershed/County** Lower Clark Fork Watershed/Ravalli County

7. Evaluating Agency Confluence for MDT

8. Wetland size acres 8.25

How assessed: Measured e.g. by GPS

9. Assesssment area (AA) size (acres) 8.25

How assessed: Measured e.g. by GPS

Purpose of Evaluation

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

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	System	Subsystem	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
Riverine	Palustrine	none	Emergent Wetland		seasonally flooded	55
Riverine	Riverine	upper perennial	Rock Bottom		Permanently flooded	20
Riverine	Palustrine	none	Scrub-Shrub Wetland		seasonally flooded	15
Riverine	Palustrine	none	Forested Wetland		seasonally flooded	10

11. Estimated Relative Abundance: (of similarly classified sites within the same major Montana Watershed Basin, see definitions) Common

12. General Condition of AA

i. Regarding disturbance: (use matrix below to determine [circle] appropriate resonse)

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

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

AA used for horse and cattle grazing.

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

Spotted knapweed, Canada thistle, oxeye daisy

iii. Brief descriptive summary of surrounding land use/habitat

Camp Creek and adjacent wetland within the Sula Basin. Surrounding land uses include pasture, past logging, private residences, and USFS property.

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)	H	M	L

Comments: Area with mature cottonwoods, developing willows and shrubs, emergent wetlands, and the main channel of Camp Creek.

SECTION PERTAINING TO FUNCTION 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 basedon definition contained in instructions):

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

Secondary habitat (list Species) ◉ **D** ○ **S** Bull trout

Incidental habitat (list species) ○ **D** ○ **S**

No usable habitat ○ **S**

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

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

Sources for documented use FWP observations and records

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 basedon definition contained in instructions):

Primary or critical habitat (list species) ○ **D** ◉ **S** West-slope cutthroat trout

Secondary habitat (list Species) ◉ **D** ○ **S** Bald eagle

Incidental habitat (list species) ○ **D** ○ **S**

No usable habitat ○ **S**

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

Highest Habitat Level	Doc./primary	Sus./primary	Doc./secondary	Sus./secondary	Doc./incidental	Sus./incidental	None
Functional Points and Rating	1H	.8H	.7M	.6M	.2L	.1L	0L

Sources for documented use FWP records, MDT observations

14C. General Wildlife Habitat Rating:

i. Evidence of overall wildlife use in the AA Moderate

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

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

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

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

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

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

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

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

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

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

Comments Good connectivity to surrounding habitats.

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., click ☐ **(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], the Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

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

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

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

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

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

Comments Reconstructed channel supports native fish populations. Enhancement of habitat: pools, riffles, and overhanging banks.

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, check ☐ **NA** here and proceed to the 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 not outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

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

Comments: MDT property directly downstream of Grasser AA, no man-made features on dowstream parcel.

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, check ☐ **NA** here and proceed to 14G.)

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

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

Comments: Adjacent wetlands within floodplain of Camp Creek with a maximum capacity of approximately 2 acre feet.

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

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])

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

Comments: Increase of shrub cover along channel

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

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

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

Comments: Some areas of localized bank erosion and channel migration/adjustment observed, <10%.

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	.7	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.2L	.2L	.1L

Comments: Perennial stream with high structural diversity and surface outlet.

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

i. Discharge Indicators

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

ii. Recharge Indicators

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

iii. Rating: Use the information from i and ii above and the table below to arrive at [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	1H
No Discharge/Recharge indicators present	0.1L
Available Discharge/Recharge information inadequate to rate AA D/R potential	NA

Comments: AA likely picks up hydrology from adjacent slope to east of creek.

14K. Uniqueness:

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

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

Comments:

14L. Recreation/Education Potential: i. Is the AA a known rec./ed. Site ◉ 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 i 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	1H	.5M	.2L
Private ownership	.7M	.3L	.1L

Final Rating:

.3L

Comments:

General Site Notes

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

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	H	.8	1	6.6
B. MT Natural Heritage Program Species Habitat	H	.8	1	6.6
C. General Wildlife Habitat	M	.7	1	5.775
D. General Fish Habitat	H	.9	1	7.425
E. Flood Attenuation	M	.6	1	4.95
F. Short and Long Term Surface Water Storage	M	.6	1	4.95
G. Sediment/Nutrient/Toxicant Removal	H	.9	1	7.425
H. Sediment/Shoreline Stabilization	H	1	1	8.25
I. Production Export/Food Chain Support	H	1	1	8.25
J. Groundwater Discharge/Recharge	H	1	1	8.25
K. Uniqueness	M	.5	1	4.125
L. Recreation/Education Potential	L	.3	1	2.475
Totals:		9.1	12	75.075
Percent of Possible Score		**75.83** %		

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

OVERALL ANALYSIS AREA RATING:
(circle appropriate category based on the criteria outlined below)

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

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring
Camp Creek
Ravalli County, Montana

Photo Point 1 – *Photo 1*
Bearing: Northeast
Location: T-1, finish
Taken in 2009

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

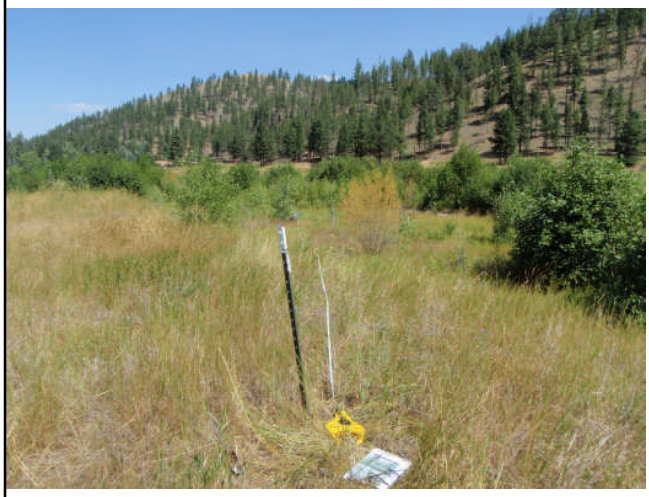


Photo Point 1 – *Photo 1*
Bearing: Northeast
Location: T-1, finish
Taken in 2010

Photo Point 2 – *Photo 1*
Bearing: Southwest
Location: T-1, start
Taken in 2010

Photo Point 1 – *Photo 1*
Bearing: Northeast
Location: T-1, finish
Taken in 2011

Photo Point 2 – *Photo 1*
Bearing: Southwest
Location: T-1, start
Taken in 2011

Photo Point 3 – *Photo 1*
Bearing: Northeast
Location: Camp Creek riparian
Taken in 2009

Photo Point 4 – *Photo 1*
Bearing: North
Location: Veg Com 3
Taken in 2009

Photo Point 3 – *Photo 1*
Bearing: Northeast
Location: Camp Creek riparian
Taken in 2010

Photo Point 4 – *Photo 1*
Bearing: North
Location: Veg Com 3
Taken in 2010

Photo Point 3 – *Photo 1*
Bearing: Northeast
Location: Camp Creek riparian
Taken in 2011

Photo Point 4 – *Photo 1*
Bearing: North
Location: Veg Com 3
Taken in 2011

Photo Point 5 – *Photo 1*
Bearing: West

Location: Camp Creek riparian corridor and upland community 1
Taken in 2009

Photo Point 5 – *Photo 1*
Bearing: West

Location: Camp Creek riparian corridor and upland community 1
Taken in 2010

Photo Point 5 – *Photo 1*
Bearing: West

Location: Camp Creek riparian corridor and upland community 1
Taken in 2011

Photo Point 6 – *Photo 1*
Bearing: North

Location: Camp Creek channel
Taken in 2009

Photo Point 6 – *Photo 1*
Bearing: North

Location: Camp Creek channel
Taken in 2010

Photo Point 6 – *Photo 1*
Bearing: North

Location: Camp Creek channel
Taken in 2011

Photo Point 7 – *Photo 1*
Bearing: South

Location: North end of site
Taken in 2009

Photo Point 7 – *Photo 1*
Bearing: South

Location: North end of site
Taken in 2010

Photo Point 7 – *Photo 2*
Bearing: South

Location: North end of site
Taken in 2011

Photo Point 8 – *Photo 1*
Bearing: West

Location: North end of site
Taken in 2009

Photo Point 8 – *Photo 1*
Bearing: West

Location: North end of site
Taken in 2010

Photo Point 8 – *Photo 1*
Bearing: West

Location: North end of site
Taken in 2011

Photo Point 9 – *Photo 1*
Bearing: North

Location: Downstream of culvert on Grasser parcel
Taken in 2009

Photo Point 9 – *Photo 1*
Bearing: Northeast

Location: Downstream of culvert on Grasser parcel
Taken in 2010

Photo Point 9 – *Photo 1*
Bearing: North

Location: Downstream of culvert on Grasser parcel
Taken in 2011

Photo Point 10 – *Photo 1*
Bearing: West

Location: East side of Camp Creek riparian corridor on Grasser parcel
Taken in 2009

Photo Point 10 – *Photo 1*
Bearing: West

Location: East side of Camp Creek riparian corridor on Grasser parcel
Taken in 2010

Photo Point 10 – *Photo 1*
Bearing: West

Location: East side of Camp Creek riparian corridor on Grasser parcel
Taken in 2011

Photo Point 11 – *Photo 1*
Bearing: North

Location: Downstream of culvert on Grasser parcel
Taken in 2009

Photo Point 11 – *Photo 1*
Bearing: North

Location: Downstream of culvert on Grasser parcel
Taken in 2010

Photo Point 11 – *Photo 1*
Bearing: North

Location: Downstream of culvert on Grasser parcel
Taken in 2011

Photo Point 12 – *Photo 1*
Bearing: South
Location: Upstream of culvert
Taken in 2009

Photo Point 13 – *Photo 1*
Bearing: South
Location: Camp Creek
Taken in 2009

Photo Point 12 – *Photo 2*
Bearing: South
Location: Upstream of culvert
Taken in 2010

Photo Point 13 – *Photo 2*
Bearing: South
Location: Camp Creek
Taken in 2010

Photo Point 12 – *Photo 2*
Bearing: South
Location: Upstream of culvert
Taken in 2011

Photo Point 13 – *Photo 1*
Bearing: South
Location: Camp Creek
Taken in 2011

Photo – *XS-3 downstream*
Bearing: West

Location: Camp Creek
Taken in 2010

Photo– *XS-3 upstream*
Bearing: East

Location: Camp Creek
Taken in 2011

Photo– *XS-3 upstream*
Bearing: East

Location: Camp Creek
Taken in 2010

Photo– *XS-3 upstream*
Bearing: East

Location: Camp Creek
Taken in 2011

Photo– *XS-4 downstream*
Bearing: North

Location: Camp Creek
Taken in 2010

Photo– *XS-4 downstream*
Bearing: North

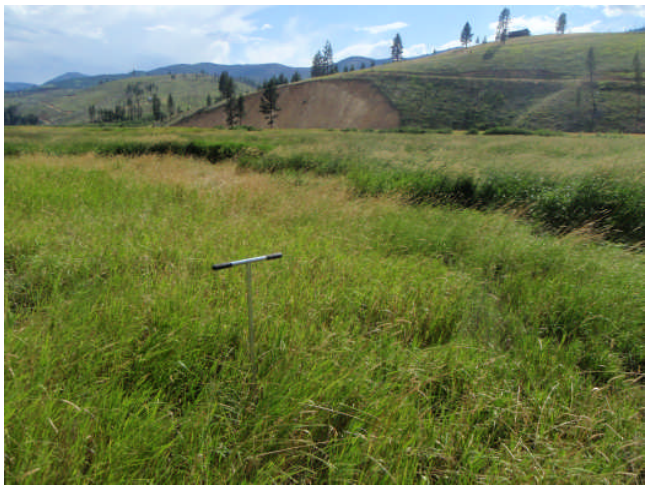
Location: Camp Creek
Taken in 2011

Photo– *XS-4 upstream*
Bearing: South

Location: Camp Creek
Taken in 2010

Photo– *XS-4 upstream*
Bearing: South

Location: Camp Creek
Taken in 2011

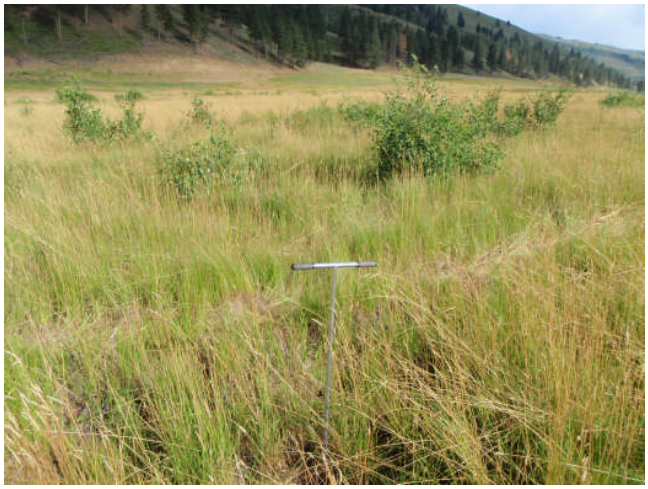


Data Point 1
Bearing: Southwest
Location: CC-1u
Taken in 2011

Data Point 2
Bearing: Southwest
Location: CC-1w
Taken in 2011

Data Point 3
Bearing: Northwest
Location: CC-2u
Taken in 2011

Data Point 4
Bearing: Southeast
Location: CC-2w
Taken in 2011



Data Point 5
Bearing: Southeast
Location: CC-3u
Taken in 2011

Data Point 6
Bearing: Southeast
Location: CC-3w
Taken in 2011

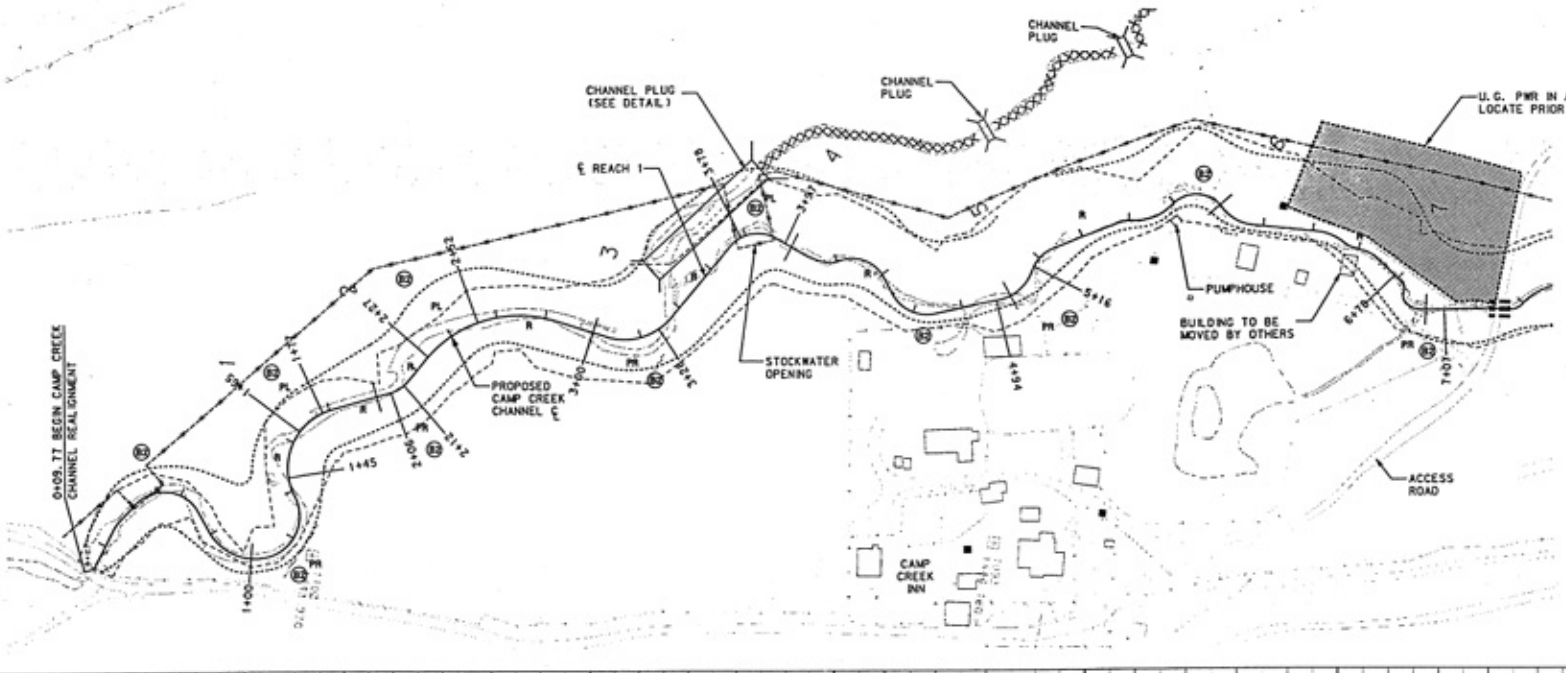
Appendix D

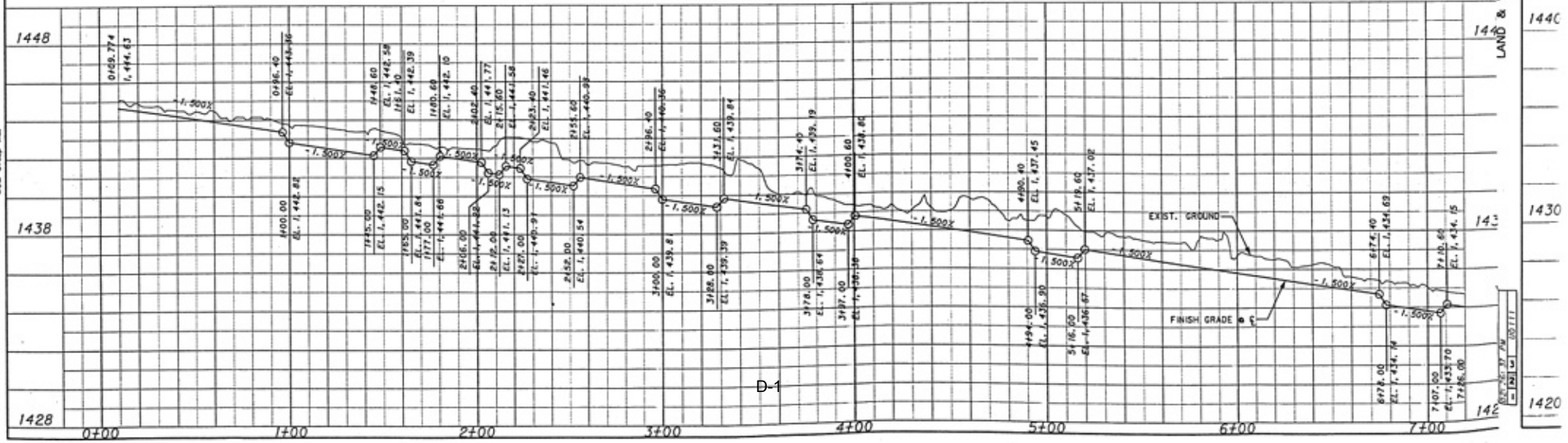
Project Site Plan

MDT Wetland Mitigation Monitoring
Camp Creek
Ravalli County, Montana

STATE	PROJECT NUMBER	SHEET
MONTANA	NH 41 (24)	29

CAMP CREEK RESTORATION

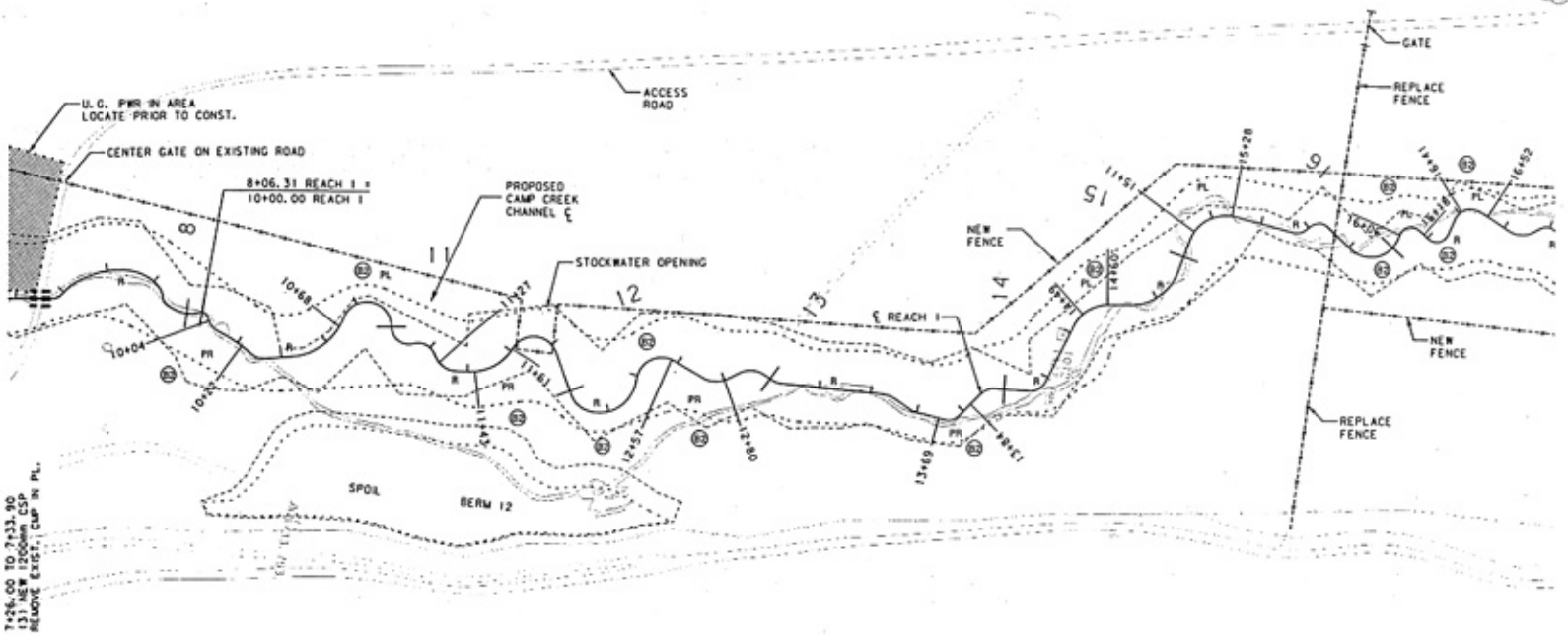




STATE	PROJECT NUMBER	SHEET NO.
MONTANA	NH 41(24)	30

CAMP CREEK RESTORATION

LAND & WATER D-2



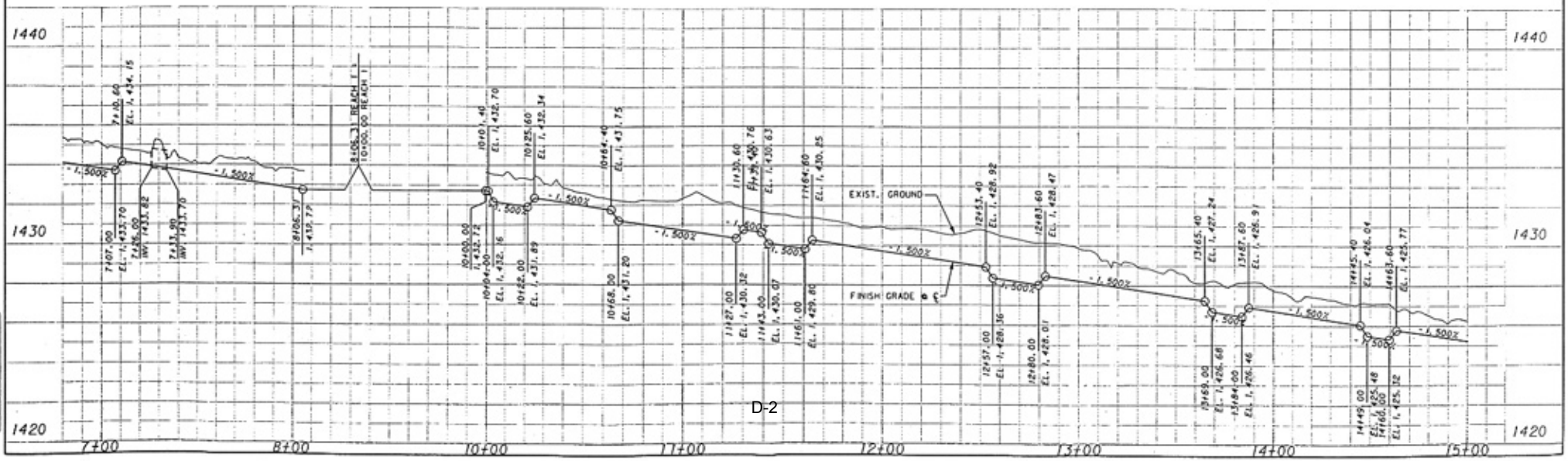
LEGEND

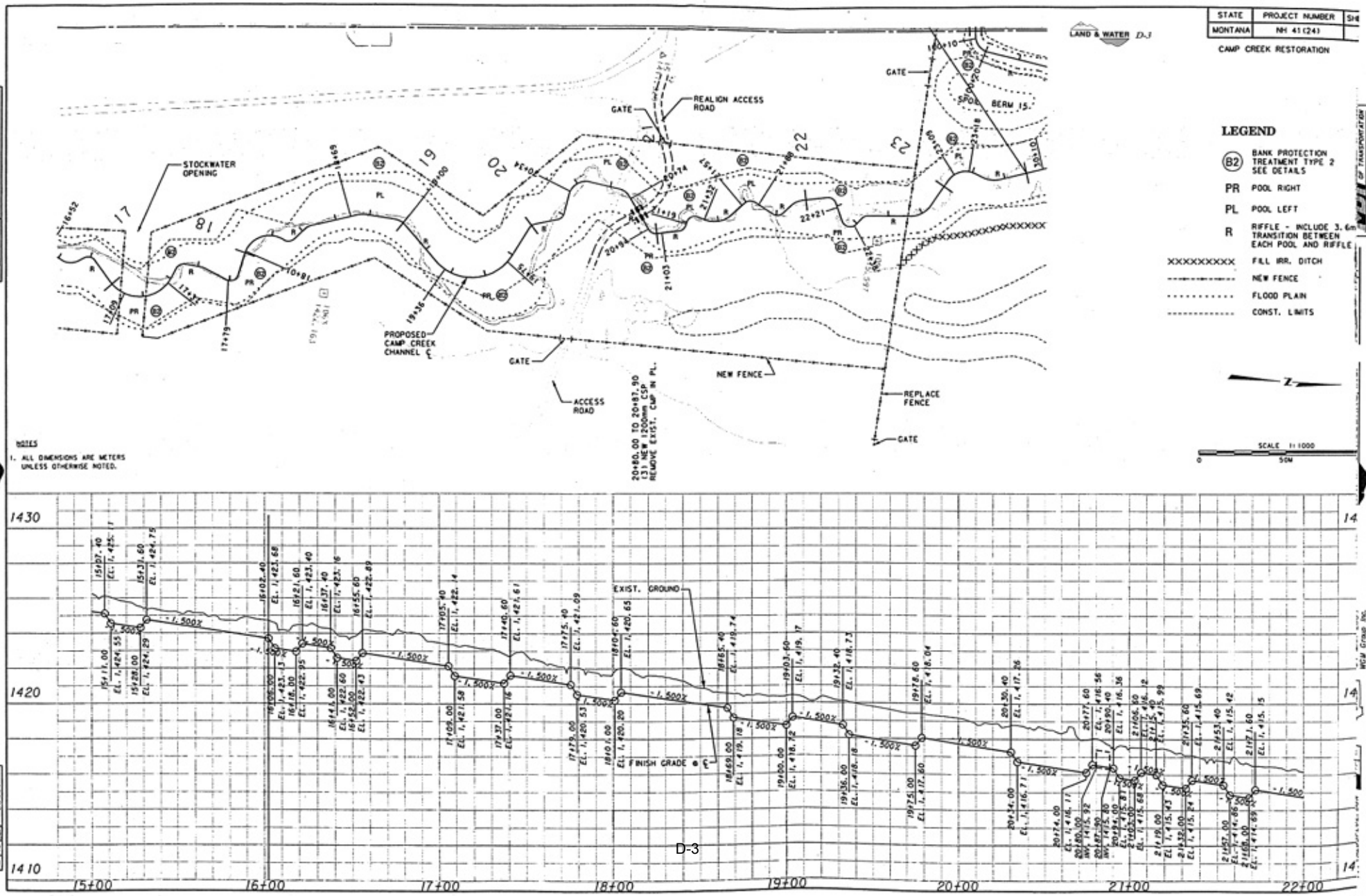
- (B2) BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
- PR POOL RIGHT
- PL POOL LEFT
- R RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
- XXXXXXXXX F&L WR. DITCH
- NEW FENCE
- FLOOD PLAIN
- CONST. LIMITS

NOTES

1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.

SCALE 1:1000

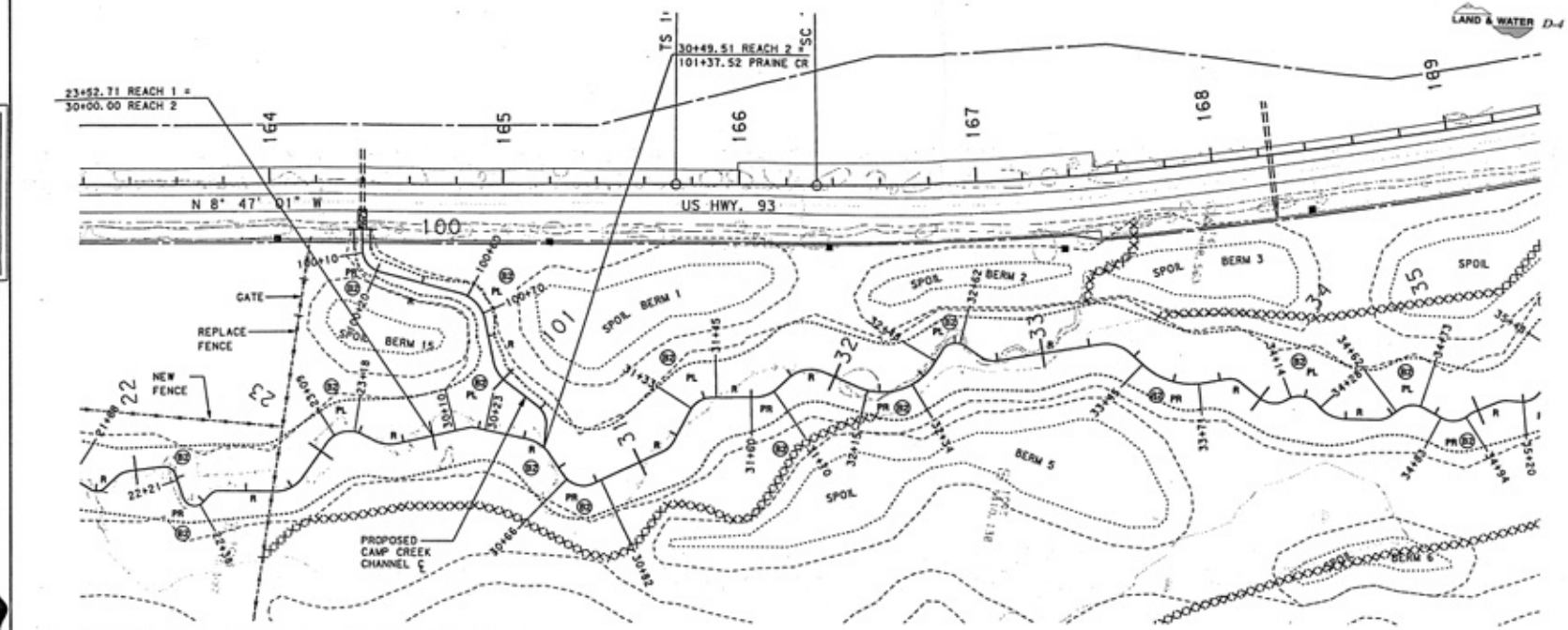



LAND & WATER D-3
STATE
MONTANA
PROJECT NUMBER
NH 41 (24)
CAMP CREEK RESTORATION
LEGEND
B2 BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
PR POOL RIGHT
PL POOL LEFT
R RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
XXXXXXXXX FILL IRR. DITCH
NEW FENCE
FLOOD PLAIN
CONST. LIMITS
STOCKWATER OPENING
REALIGN ACCESS ROAD
GATE
SPOIL BERM 15.
PROPOSED CAMP CREEK CHANNEL ℄
ACCESS ROAD
NEW FENCE
REPLACE FENCE
20+80.00 TO 20+87.90 (3) NEW 1200mm CSP REMOVE EXIST. CMP IN PL.
NOTES
1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.
SCALE 1:1000
EXIST. GROUND
FINISH GRADE ℄
1430
1420
1410
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00

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

CAMP CREEK RESTORATION

LAND & WATER D-4



LEGEND

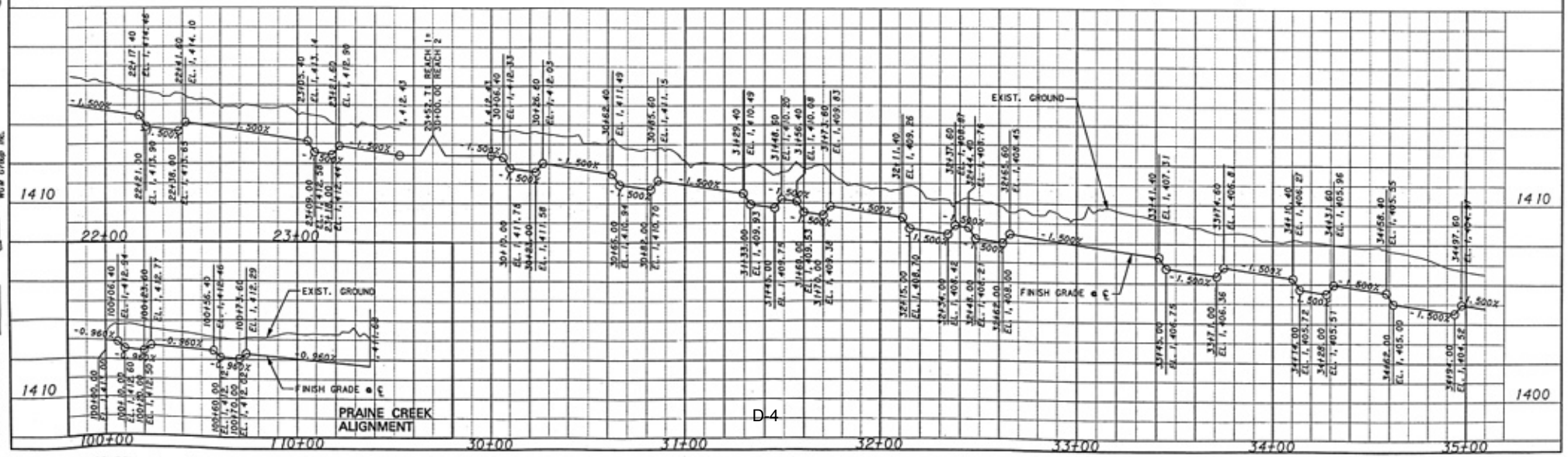
- (B2) BANK PROTECTION TREATMENT TYPE 2 SEE DETAILS
- PR POOL RIGHT
- PL POOL LEFT
- R RIFFLE - INCLUDE 3.6m TRANSITION BETWEEN EACH POOL AND RIFFLE
- XXXXXXXXX FILL IRR. DITCH
- NEW FENCE
- FLOOD PLAIN
- CONST. LIMITS

NOTES

1. ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED.

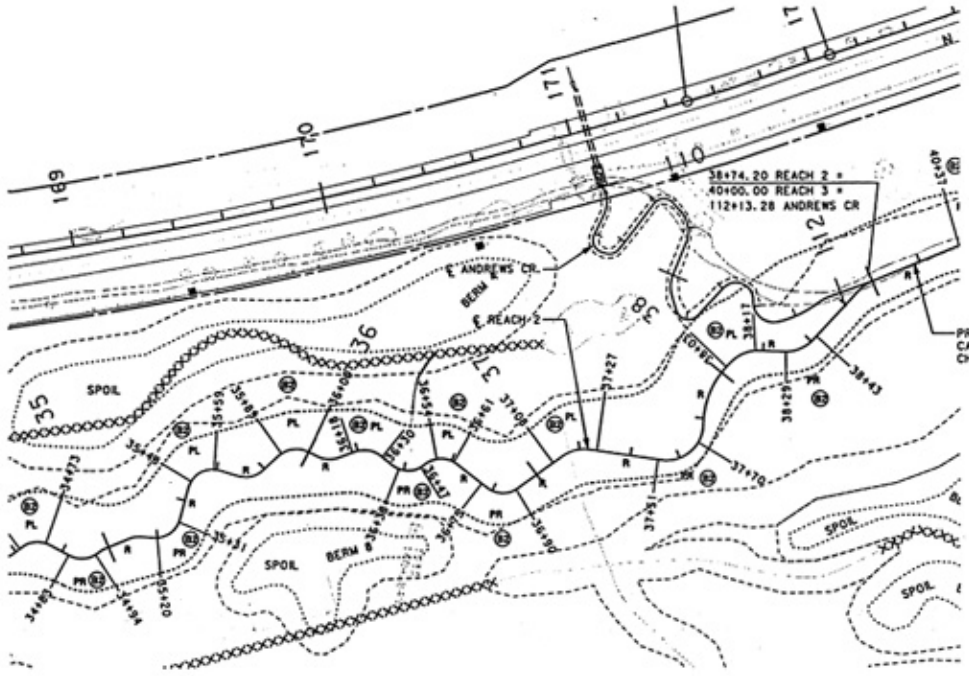
SCALE 1:1000

0 50M 100M



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

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