Biological Resource Report / Preliminary Biological Assessment

Lockwood Interchange - Billings

STPX 90-8(191)450

UPN 9588000

Yellowstone County, Montana

May 19, 2020

FINAL REPORT

Prepared for:

Montana Department of Transportation
2701 Prospect Avenue
Helena, MT 59620

Prepared by:

HDR
970 S. 29th Street West
Billings, MT 59102

EXECUTIVE SUMMARY

The following Biological Resource Report/Preliminary Biological Assessment provides an evaluation of the proposed project's potential effects on general terrestrial and aquatic resources, species of concern and special status species, and threatened and endangered species. Environmental resource information for the project area and vicinity was gathered through a combination of literature/database review, resource agency consultation, and on-site field investigation.

Project Purpose

The purpose of the project is to address roadway deficiencies and improve traffic operations at the Lockwood Interchange as well as along Interstate 90 (I-90) between Lockwood Interchange and Johnson Lane Interchange. Improvements to I-90 are currently being designed on the segment to the west of the project as part of the I-90 Yellowstone R – Billings project (UPN 7972000), which ends on the west side of the Lockwood Interchange and includes interstate widening to provide three through lanes in each direction. The Johnson Lane interchange directly east of the project will be reconstructed as part of the Billings Bypass project (UPN 4199006 and 4199007). This project will connect the two adjacent projects while taking into consideration the operations and access at the Lockwood Interchange.

Project Description and Location

The Montana Department of Transportation is conducting an Other (OT) Phase study to evaluate interchange improvement options of the Lockwood Interchange located on I-90 near Billings, MT. The evaluation will consider both current and future traffic patterns, ramp functionality, operational issues on I-90 and connecting routes, proposed interstate modifications, safety considerations, and bridge construction options. The project study area extends along I-90 from approximately the Lockwood Interchange at reference post (RP) 452.5 to the Johnson Lane Interchange at RP 455.3 and includes the vicinity of the Lockwood Interchange, including on/off ramps and Old U.S. Highway 87 (Old US-87; Old Hardin Road) west to the railroad overpass west of North Frontage Road and east to Lockview Lane. This project includes the development of an auxiliary lane (3rd travel lane) on I-90 in each direction between interchanges. The horizontal alignments and lane configurations of the Lockwood Interchange ramps will be evaluated as part of the interchange alternative analysis. Configurations that will be evaluated may include diamond, tight diamond, single point urban interchange (SPUI), roundabouts and diverging diamond interchange (DDI).

This project is located east of Billings in Yellowstone County. The project is located within the Billings urbanized area and east of the city limits approximately 1.5 miles from Downtown Billings. The Lockwood Interchange is within the Census-Designated Place for Lockwood, MT. The project is located in Sections 25, 26, and 35 of Township 1 North, Range 26 East and Sections 19 and 30 of Township 1 North, Range 27 East, Montana Principal Meridian. The project area is 175 acres encompassing an approximate 150-foot buffer extending beyond the project roadway centerlines.

Summary of Potential Impacts

Potential impacts resulting from the proposed project have been conceptually identified and qualitatively described based on the intended scope of the project. Widening of I-90 toward the median or to the outside will be evaluated during the alternative analysis; however, as is occurring

with the adjacent I-90 Yellowstone R - Billings project, highway widening under the proposed project is anticipated to occur inwards towards the median. A preferred alternative concept for the reconstruction of the Lockwood Interchange has not been identified and thus impacts resulting from the project can only be generalized. The potential impact on vegetation is anticipated to be minor. The majority of impact would occur to roadside grasses and forbs and, to a lesser extent, to a few scattered smaller shrubs and trees located within existing right-of-way.

The proposed project is anticipated to have no impact on local populations of general wildlife species. A special provision that includes a timing restriction on tree and shrub removal and structure removal/rehabilitation will be included to avoid impacts on nesting birds and ensure compliance with the Migratory Bird Treaty Act. The proposed project is anticipated to have no impact on Species of Concern occurring in the vicinity of the proposed project.

The project area is crossed by one main irrigation supply ditch, the Lockwood Irrigation District ditch, and three intermittent streams. No impact on the Lockwood Irrigation District ditch is anticipated. It is also anticipated that the road design will not impact any of the culverts conveying the intermittent drainages within the project area. As such, no in-stream work is necessary and no impact on aquatic species or water quality is anticipated.

One wetland totaling 0.23 acre was delineated in the vicinity of the Johnson Lane Interchange. The Johnson Lane Interchange is planned to be reconstructed as part of the Billings Bypass Project and would be unaffected by the proposed project. Because impact on Wetland 1 is not anticipated under the proposed project, no additional avoidance and minimization measures are necessary.

The proposed project's effect on federally listed threatened, endangered, proposed and candidate species that may potentially occur within the project vicinity was evaluated. Section 5.3 provides the analyses supporting preliminary effect determinations relative to federally listed species with potential to occur within the project area. It has preliminarily been determined that the project as currently proposed will have **No Effect** on Whooping Crane (*Grus americana*) and Red Knot (*Calidris canutus rufa*).

Contents

Tables

Figures

Appendices

This page is intentionally left blank.

1 Introduction

1.1 Project Description and Location

The Montana Department of Transportation (MDT) is conducting an Other (OT) Phase study to evaluate interchange improvement options of the Lockwood Interchange located on Interstate 90 (I-90) near Billings, MT, in Yellowstone County. The evaluation will consider both current and future traffic patterns, ramp functionality, operational issues on I-90 and connecting routes, proposed interstate modifications, safety considerations, and bridge construction options. The project area extends along I-90 from approximately the Lockwood Interchange at reference post (RP) 452.5 to the Johnson Lane interchange at RP 455.3 and includes the vicinity of the Lockwood Interchange, including on/off ramps and Old U.S. Highway 87 (Old US-87; Old Hardin Road) west to the railroad overpass west of North Frontage Road and east to Lockview Lane. This project includes the development of an auxiliary lane (3rd travel lane) on I-90 in each direction between interchanges. Operations on I-90 and lane configurations will be examined from approximately RP 450.0+/- to RP 455.3+/-, which extends from 27th Street to Johnson Lane.

The project is located outside the city limit boundary of the City of Billings and is approximately 1.5 miles from Downtown Billings. The Lockwood Interchange is within the Census-Designated Place for Lockwood, MT. The project is located in Sections 25, 26, and 35 of Township 1 North, Range 26 East and Sections 19 and 30 of Township 1 North, Range 27 East, Montana Principal Meridian. The project area is 175 acres encompassing an approximate 150-foot buffer extending beyond the project roadway centerlines and is shown in **Figure 1-1**.

Where applicable, information within this report was taken from the Biological Resource Report/Preliminary Biological Assessment completed on August 23, 2017 for the adjacent I-90 Yellowstone R – Billings project (UPN 7972000).

1.2 Project Purpose

The purpose of the project is to address roadway deficiencies and improve traffic operations at the Lockwood Interchange as well as along I-90 between Lockwood Interchange and Johnson Lane Interchange. Improvements to I-90 are currently being designed on the segment to the west of the project as part of the I-90 Yellowstone R – Billings project (UPN 7972000), which ends on the west side of the Lockwood Interchange and includes interstate widening to provide three through lanes in each direction. The Johnson Lane interchange directly east of the project will be reconstructed as part of the Billings Bypass project (UPN 4199006 and 4199007). This project will connect the two adjacent projects while taking into consideration the operations and access at the Lockwood Interchange.

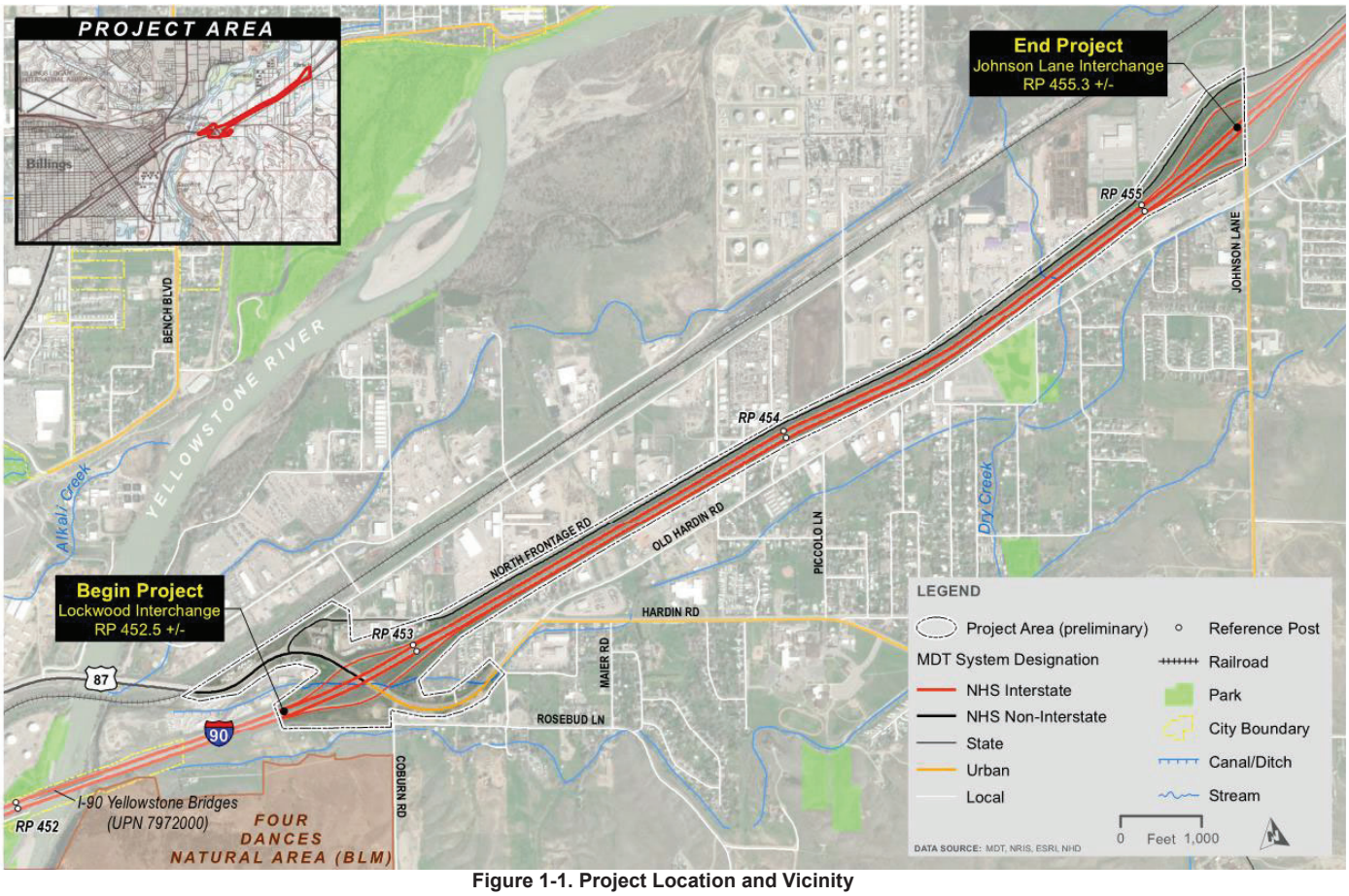


Figure 1-1. Project Location and Vicinity

This page is intentionally left blank.

1.3 Ecological Setting and General Area Description

1.3.1 Ecoregion

The project area is located within the Northwestern Great Plains level 3 ecoregion and the Montana Central Grasslands level 4 ecoregion (Woods et al. 2002, USEPA 2012). The Montana Central Grasslands ecoregion physiography is paraphrased by the following excerpt:

> *"The Central Grassland ecoregion is an unglaciated plain that is dissected by many small, ephemeral or intermittent streams. It is largely underlain by noncarbonate, fine-grained sedimentary rock of the Tertiary Fort Union Formation which become less widespread in the neighboring, but less dissected, Ecoregion 43e. Clayey frigid soils derived from residuum are common and have a ustic-aridic moisture regime; they contrast with the mesic soils of Ecoregion 43q and the less aridic soils of Ecoregion 43a. Potential natural vegetation is grama-needlegrass-wheatgrass and is distinct from that of the Sagebrush Steppe (43e) and Pine Scoria Hills (43p). Ecoregion 43n is mostly rangeland but irrigated and unirrigated farms occur in the Yellowstone Valley. Overall, farm land is less common than in the Judith Basin Grassland (43m)."*

The climate in this ecoregion is continental and is highly variable with strong seasonal differences. Climate in the Billings area is characterized by precipitation that averages approximately 14 inches per year, which mainly falls in spring and early summer (US Climate Data 2020). Annual snowfall averages approximately 54 inches per year. Wintertime average temperatures typically fall below freezing, and summertime temperatures peak in the high 80's. The Yellowstone River is the dominant hydrologic feature within this ecoregion draining a vast watershed and is the longest free-flowing river in the contiguous United States.

The project area is within the Upper Yellowstone basin and, more specifically, is predominantly located within the Five Mile-Yellowstone River watershed Hydrologic Unit Code (HUC) 1007000704 (fifth-level Hydrologic Units). A small portion of the project area west of the Lockwood Interchange is located within the Blue Creek-Yellowstone River watershed HUC 1007000410.

1.3.2 Land Cover

The Montana Natural Heritage Program (MTNHP) provided a custom Environmental Summary Report (MTNHP 2019a) for the project area and surrounding vicinity that includes a summary of land cover types for the queried area. The MTNHP query area totals approximately 3,200 acres surrounding and including the immediate project area of 175 acres. Land cover types are grouped into general ecological systems that represent groups of biological communities found in similar physical environments and are influenced by similar ecological processes. The following list includes the dominant land cover types and their overall percentage of the study area vicinity (land cover types comprising less than 5 percent of the queried area are not listed).

- Human Land Use, Developed, Commercial/Industrial – 22%
- Grassland Systems, Lowland/Prairie Grassland, Great Plains Mixedgrass Prairie – 13%
- Human Land Use, Developed, Other Roads – 12%
- Shrubland, Steppe and Savanna Systems, Sagebrush Steppe, Big Sagebrush Step – 11%
- Human Land Use, Developed, Low Intensity Residential – 8%

- Human Land Use, Developed, Interstate – 7%
- Wetland and Riparian Systems, Floodplain and Riparian, Great Plains Floodplain – 6%
- Human Land Use, Developed, Developed Open Space – 6%

1.3.3 Land Use and Ownership

The project area is located east of the city limits of Billings along I-90 in an urbanized environment consisting of the interstate and adjacent residential, commercial, and industrial uses. The commercial businesses within the project area are located at the interchanges and include several gas stations and fast food restaurants servicing the interstate traffic as well as along North Frontage Road and Old Hardin Road.

The Yellowstone County cadastral records (MSL 2019) were reviewed for the parcels located immediately adjacent to and intersecting the project area. **Figure 1-2** shows the mix of property types for the 173 parcels. The property types are based from tax assessment records for Yellowstone County. The Commercial Rural and Residential Rural categories account for approximately 36 and 32 percent, respectively, of the total parcels. Vacant Land Rural accounts for approximately 19 percent.

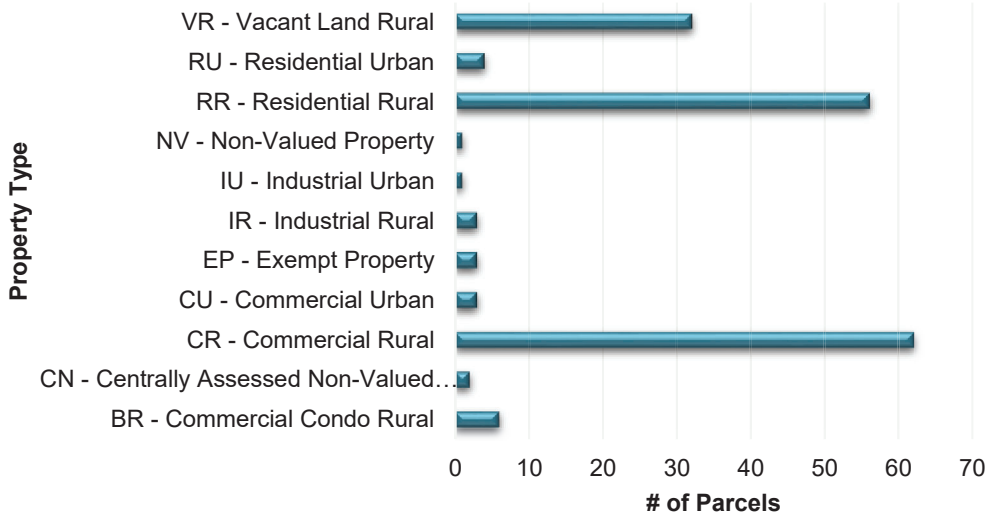


Figure 1-2. Land Use by Property Type within the Project Area

Notable properties/landowners within the project area vicinity include the Exxon Mobil refinery and Montana Rail Link, both located on the north side of I-90.

2 Terrestrial Resources

2.1 General Habitat and Vegetation Communities

2.1.1 Methods

Information reported within this section was obtained from a combination of literature and database searches and on-site field investigation. HDR environmental staff conducted a field investigation on October 24, 2019. General vegetative cover in the project area was documented during the site visit.

2.1.2 Species Presence and Distribution

In general, vegetation within the right-of-way (ROW) is limited primarily to grasses and forbs with the exception of a few scattered smaller shrubs and trees. A consistent mix of roadside grass species was observed throughout the project area corridor and appeared to be periodically mowed. Common roadside grass species observed include smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*), crested wheatgrass (*Agropyron cristatum*), and Kentucky bluegrass (*Poa partensis*). Common weed species observed within ROW included field bindweed (*Convolvulus arvensis*), Canadian thistle (*Cirsium arvense*), dandelion (*Taraxacum officinale*), and field mustard (*Brassica rapa*).

Mature trees and larger shrubs are infrequent within ROW; however, trees are intermittently established outside highway ROW throughout the corridor. Scattered eastern cottonwood (*Populus deltoides*), Russian olive (*Elaeagnus angustifolia*), and American elm (*Ulmus americana*) were observed throughout the project area corridor.

The Lockwood Irrigation Ditch crosses through the east end of the project flowing from the north to the south through a culvert system under I-90. The canal channel on the south side of I-90 consists of a steep wooded embankment. Trees observed included plains cottonwood and Russian olive. Common shrubs observed included red-osier dogwood (*Cornus alba*) and chokecherry (*Prunus virginiana*).

One final area within the project area containing mature trees and shrubs occurs in the northeast quadrant of the Lockwood Interchange. An irrigation ditch is located northeast of Old US-87 with observed species including plains cottonwood, black locust (*Robinia pseudoacacia*), chokecherry, honeysuckle (*Lonicera tatarica*), and Japanese knotweed (*Reynoutria sachalinensis*). Noxious weeds are discussed in Section 2.2 and wetland vegetation discussed in Section 3.3.

2.1.3 Potential Impacts

Given the developed nature of the corridor, limited native habitat, and the proposed roadway widening to the inside of the interstate, the potential impact on vegetation communities is anticipated to be relatively minor. The majority of impact would occur to roadside grasses and forbs and, to a lesser extent, to a few scattered smaller shrubs and trees located within existing ROW.

2.1.4 Avoidance and Minimization Recommendations

The following measures are proposed to minimize project impacts on general vegetation:

- Disturbance areas would be kept to the minimum area necessary to construct the project.

- Temporary clearing outside the construction limits but within the ROW would be minimized and restored as soon as practicable following construction.
- Tree and large shrub removal would be minimized to the greatest extent practicable.

2.2 Noxious Weeds/Regulated Plants

Information reported within this section was obtained from a combination of literature and database searches and on-site field investigation. HDR staff qualitatively documented noxious weed occurrence within the project area during the October 24, 2019 site visit. The following documents and databases pertaining to noxious weeds were reviewed:

- Yellowstone County Public Works – Noxious Weed Division
- Montana Department of Agriculture (2019) Noxious Weed List

Executive Order 13112 (established February 3, 1999) was established to prevent the introduction of invasive species and to control and minimize the economic, ecological, and human health impacts caused by invasive species. As a partially federally funded action, the proposed project is subject to the provisions of Executive Order 13112.

2.2.1 Species Presence and Distribution

Yellowstone County Public Works Noxious Weed Division provides details on weeds designated as "noxious" by rule of the Montana Department of Agriculture or by the Yellowstone County Weed Board. The Weed Board identifies a multitude of weeds as "noxious" in Yellowstone County and has developed a program to prioritize control efforts throughout the county. While there are many designated noxious weeds occurring in Yellowstone County[1], **Table 2-1** lists only the weeds that were observed in the project area during the October 2019 field investigation and include their priority status.

Table 2-1. Noxious Weeds Observed in the Project area

Common Name	Scientific Name	Priority Status
Canada thistle	*Cirsium arvense*	2B
Cheatgrass	*Bromus tectorum*	3
Field Bindweed	*Convolvulus arvensis*	2B
Sources: Yellowstone County Weed District, 2019		

Priority 2B species are weeds that, from a statewide management perspective, are abundant in Montana and widespread in many counties. Although dispersed throughout the project area in small groupings, large infestations of noxious weeds were not observed. Priority 3 species are regulated plants that have potential for significant negative impacts, although they are not Montana-listed noxious weeds. Priority 3 species may not be intentionally spread or sold other than as a contaminant in agricultural products. The state recommends research, education and prevention to minimize the spread of the regulated plant. Only minor distributions of weeds were observed along the roadsides within existing highway ROW in the project area during the field investigation.

[1] See http://www.co.yellowstone.mt.gov/publicworks/weed/weeds.asp for more information.

Avoidance and Minimization Recommendations

The contractor will follow MDT standard specification 107.11.5, Noxious Weed Management, which includes the requirement to use clean equipment when entering a new project site to avoid and minimize the spread of noxious weeds. This standard specification is included in the bid documents/contract. A special provision specific to noxious weed management is not anticipated.

2.3 General Wildlife Species

2.3.1 Methods

Information reported within this section was obtained from literature and database information maintained by the MTNHP to identify mammals, birds, amphibians, reptiles, and invertebrates that have potential to occur in the project area vicinity. The potential for animals to occur in the project vicinity was further screened based on geographic location comments documented in the MTNHP database, suitable habitat in the project vicinity, and observation dates no greater than 20 years old.

2.3.2 Mammals

Species observed/documented, general abundance, distribution, and habitat requirements

According to the MTNHP Generalized Observations database (MTNHP 2019b) the following mammal species may potentially be present in the project area vicinity based on multiple past observations: beaver (*Castor canadensis*), eastern fox squirrel (*Sciurus niger*), mule deer (*Odocoileus hemionus*), striped skunk (*Mephitis mephitis*), and white-tailed deer (*Odocoileus virginianus*). Several bat species have been previously observed in the vicinity of the project that include big brown bat (*Eptesicus fuscus*), little brown myotis (*Myotis lucifugus*), and long-eared myotis (*Myotis evotis*).

The project area is limited primarily to transportation ROW containing the interstate and adjacent frontage roads. The project area vicinity is heavily developed and connectivity between the different habitats associated with riparian floodplain to the north and mixedgrass prairie and sagebrush steppe to the south is limited. The interstate system limits mobility and potentially discourages wildlife movement through the project area.

Potential Impacts

Due to the nature and scope of the proposed project, impacts on mammal populations are anticipated to be minor and without long-term effects to local populations. Suitable habitat for mammals is limited in the project area and impacts on potential habitat would be limited to areas immediately adjacent to the existing highway and in proximity to developed land. Construction of the project could result in direct mortality of individual animals. Impact is likely to be greater for species with limited mobility such as rodents; animals with greater mobility would be able to move to suitable adjacent habitat outside of the immediate project area. Noise effects would be temporary, localized, and would occur only during daylight working hours.

Avoidance and Minimization Recommendations

No avoidance and minimization recommendations are provided at this time.

2.3.3 Birds

Species observed/documented, general abundance, distribution, and habitat requirements

The MTNHP Generalized Observations database includes observations for many dozens of bird species in the vicinity of the project area. An exhaustive list of species occurring within the project area is not presented here. However, an abbreviated list of bird species frequently observed within an approximate half mile of the project area includes: American Crow (*Corvus brachyrhynchos*), American Robin (*Turdus migratorius*), Belted Kingfisher (*Megaceryle alcyon*), Black-billed Magpie (*Pica hudsonia*), Black-capped Chickadee (*Poecile atricapillus*), Canada Goose (*Branta canadensis*), Common Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), Downy Woodpecker (*Dryobates pubescens*), European Starling (*Sturnus vulgaris*), House Sparrow (*Passer domesticus*), Mallard (*Anas platyrhynchos*), Northern Flicker (*Colaptes auratus*), Ring-necked Pheasant (*Phasianus colchicus*), Song Sparrow (*Melospiza melodia*), and White-breasted Nuthatch (*Sitta carolinensis*) (MTNHP 2019b). Waterfowl and riparian dependent species listed above utilize habitat along the nearby Yellowstone River where they are often observed. Unoccupied swallow nests, as well as signs of former nests, were observed during the October 2019 field investigation underneath both the Lockwood and Johnson Lane interchange structures spanning I-90.

Potential Impacts

The proposed project is not anticipated to result in long-term negative impacts on any bird populations. Minimal impact on vegetation that may provide nesting, perching, and foraging habitat is expected to occur. Special provisions will be included as conservation measures to minimize impact on migratory birds (see below) by ensuring that tree and shrub removal and bridge disturbance occurs outside of the nesting period. Construction-related noise may temporarily disrupt birds in the vicinity of the project during construction activity.

Avoidance and Minimization Recommendations

The following conservation measures are proposed to minimize project impacts on bird species and habitat.

- Special provision 107-25a, Migratory Bird Treaty Act Compliance – Structures (Revised 2-18-16) will be included in the final construction bid documents to avoid and minimize potential impacts on migratory birds resulting from structure removal or work that may directly impact active nests.
- Special Provision number 107-25c, Migratory Bird Treaty Act Compliance – Vegetation Removal (Added 9-26-13), will be included in the final construction bid documents to avoid and minimize potential impacts on migratory birds resulting from vegetation removal. This special provision includes the following construction requirements:
    - Perform any required cutting of trees or shrubs between August 16 and April 15;
    - Remove only those trees and shrubs in direct conflict with the permanent construction limits; and

- Where possible, do not remove, but trim trees and shrubs as necessary for equipment access and construction activities.

2.3.4 Reptiles and Amphibians

Species observed/documented, general abundance, distribution, and habitat requirements

The MTNHP database documents several reptiles in the vicinity of the project area, including common gartersnake (*Thamnophis sirtalis*), greater short-horned lizard (*Phrynosoma hernandesi*), Painted Turtle (*Chrysemys picta*), Spiny Softshell (*Apalone spinifera*), and terrestrial gartersnake (*Thamnophis elegans*). Amphibians documented to occur in the project area vicinity include the American bullfrog (*Lithobates catesbeianus*) and northern leopard frog (*Lithobates pipiens*) (MTNHP 2019b). Although the timing of the field survey was not ideal for observing reptiles and amphibians, none were observed in the study area during the October site investigation. Habitat for these species is uncommon in the project area.

Potential Impacts

While the proposed project may cause the mortality of individual reptiles and amphibians, it is not anticipated to adversely affect local populations as a whole. The extent of impact on aquatic resources adjacent to the roadway is unknown at this time. However, wetland and riparian areas are very limited in the project area and potential impact on suitable habitat for reptiles and amphibians is anticipated to be minor and discountable.

Avoidance and Minimization Recommendations

No additional avoidance and minimization measures are recommended at this time.

2.4 Wildlife Accommodations Needs and Opportunities

The purpose of this section is to evaluate and identify potential design features or strategies that may be incorporated into the proposed project to minimize the effects of the project on wildlife or their habitat and reduce or eliminate the potential for wildlife-vehicle conflicts, or WVCs.

2.4.1 Methods

Information reported within this section was obtained from literature review and MDT carcass GIS database information. MDT carcass data (MDT 2018) was reviewed for the 10-year period ranging from 2008 to 2018 to examine spatial patterns in WVCs and identify clusters, if any, within the project area vicinity.

2.4.2 Needs Analysis

Table 2-2 shows the total number of animal carcasses removed from the roadway by MDT maintenance staff within the project area including one-quarter mile beyond the project area boundaries. In total, 59 carcasses were recorded over the 10-year period with mule deer accounting for 83 percent of the carcasses in the project area vicinity. **Figure 2-1** shows the carcass data by animal for the 10-year period in the vicinity of the project area.

Table 2-2. Animal Carcass Data within a Quarter-mile of the Project Area (2008-2018)

Animal	Lockwood Interchange – Billings Project Area (RP 452.3 to 455.6)
White-tailed Deer	5
Mule Deer	49
Other (Wild)	3
Domestic	1
TOTAL	**58**
Source: MDT 2018	

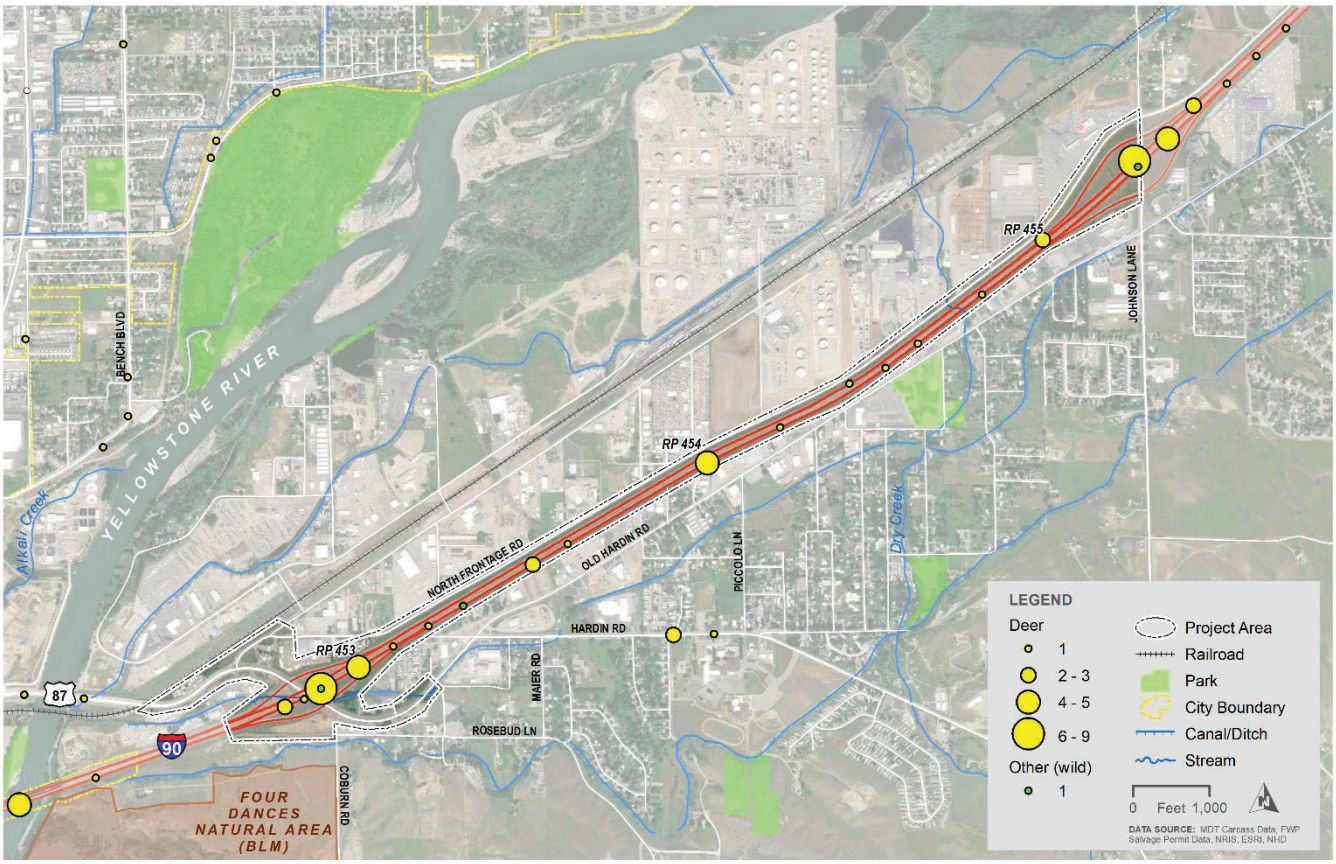


Figure 2-1. Carcass Data for the Project Area and Vicinity, 2008-2018

Notable clusters in the data are observed near the interchanges. Between RP 452.8 and RP 453.0, near the Lockwood Interchange, there were 17 mule deer carcasses removed from the highway within the 10-year period. Similarly, between RP 455.3 and RP 455.6, near the Johnson Lane Interchange, there were 16 carcasses removed from the highway within the 10-year period. While the data suggests a cluster in these locations, averaged over the 10-year period, the interchanges are experiencing fewer than two mule deer fatalities per year. WVCs are likely under reported and the actual numbers of incidents and deer mortality may be higher than the data suggests.

During the field survey, no defined wildlife trails suggesting high wildlife use were noted running perpendicular to and crossing the interstate in the vicinities of the interchanges. No ungulate tracks

were observed underneath or adjacent to the interchange bridges and no animal carcasses were identified. The project area is a controlled access interstate with ROW fencing consisting of standard six-foot-high chain link extending the full length of the project corridor. The fencing has breaks in it, however, at the interchange on/off ramps, which would appear to provide an opportunity for deer to enter the interstate corridor.

2.4.3 General Recommendations

The proposed project includes widening the highway by including an auxiliary lane in both directions between the two interchanges. While the addition of an auxiliary lane will add two additional lanes, the widening is anticipated to occur inwards towards the median, and the project will not increase the distance between cross-highway habitats used by local wildlife.

The level of WVCs in the project areas are expected to remain relatively constant with annual fluctuations resulting from variable wildlife population levels and other natural and anthropogenic causes. Considering the high levels of traffic associated with I-90 and Old US-87 and Johnson Lane at the interchanges, this locations are not considered a candidate to be designated as a wildlife crossing (either underpass or overpass), as doing so may lead to increased WVCs at the interchanges. Based on this analysis and the limited scope of work, no wildlife accommodations are recommended for consideration with this project.

3 Aquatic Resources

3.1 Waterways

3.1.1 Methods

Information reported within this section was obtained from a combination of literature and database searches and on-site field investigation. HDR environmental staff conducted a field investigation of the project area on October 24, 2019. Existing documentation reviewed for this section includes the following:

- USGS National Hydrography Dataset (USGS 2018)
- Montana Natural Heritage Program Wetland and Riparian Framework (MTNHP 2018)

Waterways were delineated in accordance with the USACE Regulatory Guidance Letter No. 05-05 Ordinary High Water Mark Identification (USACE 2005). Following USACE guidance, the OHWM was based on observation of physical characteristics on the streambanks within the project area to ascertain the lateral limits of USACE jurisdiction. The OHWM delineation was limited to areas within the project area where legal access had been granted prior to the October 2019 field investigation. Based on the scope of the project and anticipated impacts, OHWM delineation focused on the intermittent stream feature within the Johnson Lane Interchange. Should future design considerations extend outside the current anticipated project area, additional OHWM delineation may be required at Box Elder Creek and Dry Creek.

3.1.2 Site Description

Three intermittent streams are located within the project area and, described west to east, they include:

- Box Elder Creek at RP 453.5
- Dry Creek at RP 454.7
- Unnamed Tributary to the Yellowstone River at RP 455.3 (Johnson Lane Interchange)

One irrigation ditch, the Lockwood Irrigation District Ditch, is located within the project area and is further described below. These features are described in the following section and are shown in **Figure 3-1**.

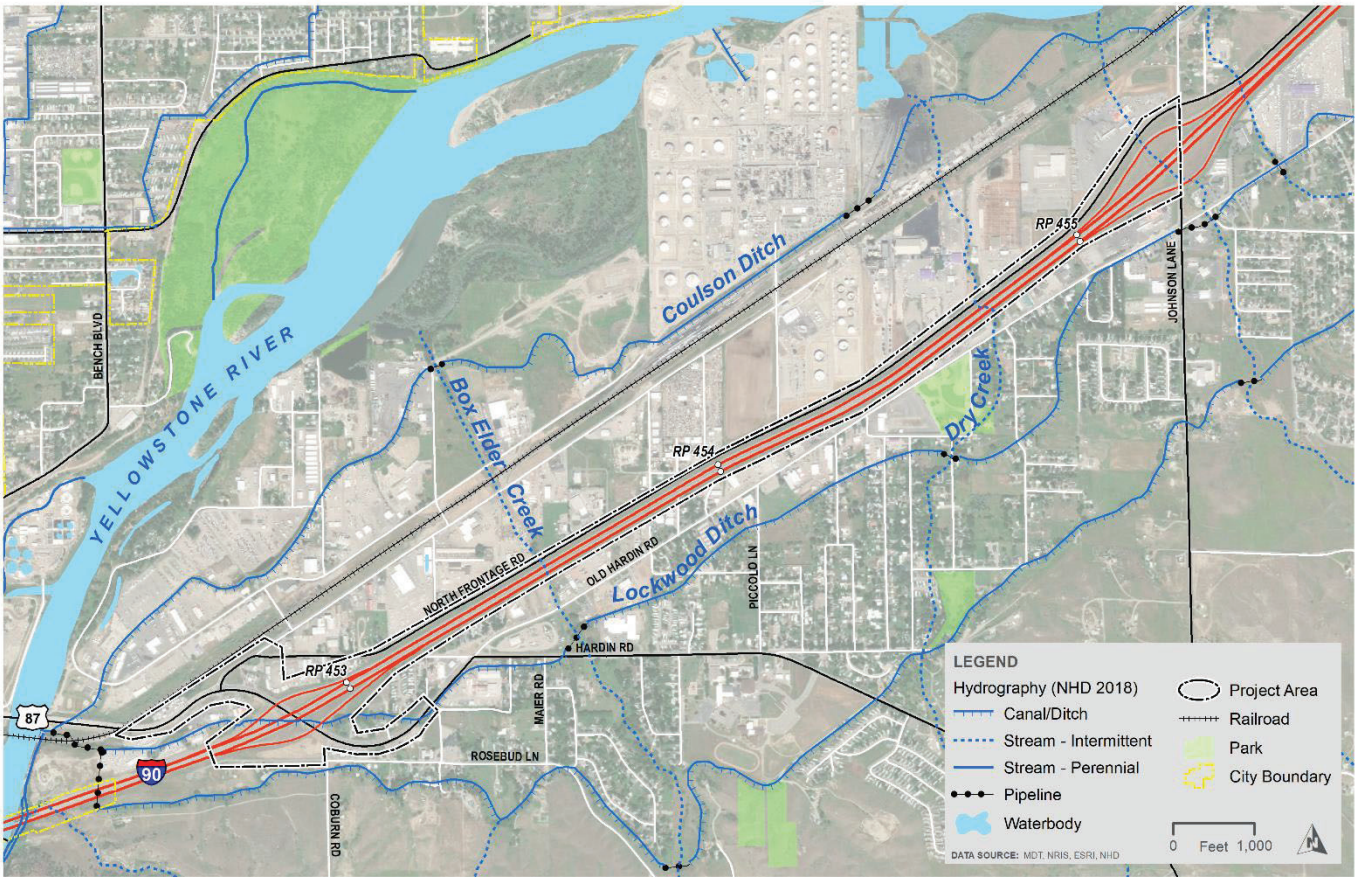


Figure 3-1. Hydrography in the Project Area Vicinity

Lockwood Irrigation District Ditch

The Lockwood Irrigation District was created in 1913 and supplies irrigation water to agricultural areas to the east of Billings. The irrigation canal is created by an approximately 3,500-foot-long constructed diversion berm that diverts flows from the main channel of the Yellowstone River to a pump house located adjacent to the river. The diversion berm and pump house are located approximately 0.5 mile west of the Lockwood Interchange. From the pump house, water is pumped up to the 60-foot Lift Ditch, located within the project area, and the 100-foot Lift Ditch, located outside the project area.

The 60-foot Lift Ditch serves as the main supply ditch and begins approximately 500 feet east of the pump house and flows easterly through and south of the existing commercial properties on the north side of I-90. The ditch then crosses the Lockwood Interchange and enters the project limits diagonally through a 48-inch RCP siphon. Recent inspections note that the RCP pipe is in good condition at the inlet and outlet ends (**Figure 3-2**). The siphon under this project will not be impacted by the project design. No water was flowing in this ditch during the October 2019 site visit.

An irrigation study conducted for the project reviewed as-builts and identified at least 14 lateral crossings under the interstate within the project area. Based on as-built data, all of the crossings have either 24-inch circular diameter or 24-inch arch equivalent diameter. It is the practice of the Lockwood Irrigation District to retain all irrigation infrastructure to maintain the value of the irrigation district to allow for potential future irrigation use.

Figure 3-2. Lockwood Irrigation District 60-ft. Lift Ditch, 48-in. RCP Siphon Entrance and Exit

Box Elder Creek

Box Elder Creek is an intermittent tributary to the Yellowstone River that crosses I-90 through the project area at approximately RP 453.5. Box Elder Creek begins approximately 4 miles south of the project area. The USGS National Hydrography Dataset does not have a formal name for this feature; however, it is informally referred to as Box Elder Creek. There are several tributary branches that enter the creek before it crosses I-90. The Box Elder Creek crossing under I-90 appears to be a dual 84-inch corrugated steel pipe (**Figure 3-3**). The culvert crosses both Interstate 90 and the Frontage Road. The creek flows conveyed through the Interstate 90 crossing culvert are unknown.

Figure 3-3. Box Elder Creek, Dual 84-in. CSP Entrance and Exit

Dry Creek

Dry Creek is an intermittent tributary to the Yellowstone River that crosses I-90 through the project area at approximately RP 454.7. Dry Creek begins approximately 5 miles south of the project area. There are several tributary branches that enter the creek before it crosses I-90. The Dry Creek culvert crossing of I-90 appears to be a dual 96-inch corrugated steel pipe (**Figure 3-4**). The culvert crosses both the interstate and the Frontage Road. The creek flows conveyed through the I-90 crossing culvert are unknown. It is not anticipated that the road design will impact this crossing culvert, though based on the age of the culvert and the soil characteristics, replacement may be warranted.

Figure 3-4. Dry Creek, Dual 96-in. CSP Entrance and Exit

Unnamed Tributary to the Yellowstone River

An unnamed intermittent tributary to the Yellowstone River crosses I-90 through the project area at approximately RP 455.3 under the Johnson Lane Interchange. This drainage tributary to the Yellowstone River begins approximately 3 miles south of the project area. The culvert crossing under I-90 appears to be an 84-inch corrugated steel pipe (**Figure 3-5**). There are several culverts associated with this tributary that cross Johnson Lane and the adjacent interstate ramps. Several short segments of defined bed and bank were identified during the October 2019 site visit.

Figure 3-5. Unnamed Tributary, 84-in. CSP Entrance and Exit,

3.1.3 Potential Impacts

The road design portion of the project will widen the highway inwards into the median rather than outwards, so it is preliminarily assumed that all the crossings can be retained under proposed conditions. No impact on the Lockwood Irrigation District ditch is anticipated. It is also anticipated that the road design will not impact any of the culverts conveying the intermittent drainages within the project area. However, based on the age of the culverts and the soil characteristics, this determination is subject to change and replacement may be warranted pending further investigations. This will be determined as a preferred alternative is selected and additional studies are completed.

The unnamed tributary passing through the Johnson Lane Interchange is the only stream feature not contained in a culvert within the project limits. As described above, this intermittent stream has portions of a defined bed and bank within the project area. The Johnson Lane Interchange is expected to be reconstructed as part of the Billings Bypass and impact on the intermittent stream is not anticipated by this project.

Flows within the Lockwood Irrigation District ditch occur during the typical irrigation season, which runs from approximately May to mid-September. Limited information exists on the flows occurring within the intermittent tributary streams. These drainages have limited flows during spring runoff and experience higher flows typically during larger runoff events. Because none of the culverts are anticipated to be replaced, no impact to the bed or banks of these intermittent streams is anticipated.

3.1.4 Avoidance and Minimization Recommendations

Standard best management practices (BMPs) that include erosion and sediment control(s) to minimize temporary impacts on aquatic resources and adjacent properties will be implemented during construction activities. Silt fence (or similar BMPs) would be used as necessary for areas where ground disturbances are located immediately adjacent to the irrigation and drainage features to minimize silt run-offs during storm events. The contractor would be responsible for conducting routine site monitoring to ensure all pollution control measures are installed, maintained, and functioning correctly. The construction contractor would be expected to adhere to a Spill Prevention Control and Countermeasures Plan (SPCC) to manage toxic materials associated with construction activities (e.g., equipment leakage, disposal of oily wastes, cleanup of any spills, and storage of petroleum products/chemicals in contained areas away from sensitive areas).

Potential for water quality impacts during construction would be further minimized through compliance with the various state and federal water quality regulations (see following section) and environmental special provisions anticipated for the proposed project. Standard special provisions will include: Section 107.11 (Environmental Protection) and Section 208 (Water Pollution Control and Aquatic Resource Preservation) of the *MDT Standard and Supplemental Specifications for Road and Bridge Construction* (MDT 2020). These special provisions specify the processes with which the contractor must comply to prevent or minimize pollution and control impacts on the environment.

3.1.5 Permitting Required

The project as currently anticipated does not involve in-stream work or impact to the Lockwood Irrigation District ditch and, as such, reduces the number of environmental permits required for the project. The proposed project is anticipated to require compliance with or authorizations through the following permits:

- Montana Pollutant Discharge Elimination System (MPDES) General Permit – Montana DEQ
- Municipal Separate Storm Sewer System (MS4) Permit – City of Billings/Yellowstone County

Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material into waters of the United States, including wetlands. Based on the current understanding of the project, impacts to the intermittent streams (through culvert replacement) and single wetland located at the Johnson Lane Interchange are not anticipated and a Section 404 permit would not be required. This determination is subject to change, however, as design progresses.

The proposed project is located within the City of Billings/Yellowstone County MS4 permit area boundary and would be subject to these local requirements. The addition of an auxiliary lane in both directions on I-90 between the Lockwood and Johnson Lane interchanges will increase the hydraulics compared to existing conditions. Inlet structures may be needed in areas where widening occurs toward the median and retention/detention facilities may be required to meet MS4 requirements.

Under the renewed MS4 authorization effective January 2017, permittees are authorized to discharge stormwater resulting only from MS4s in accordance with effluent limitations, monitoring requirements, and other conditions set forth in the permit. Permittees are required under the permit to develop, implement, and enforce a Storm Water Management Program to reduce the discharge of pollutants to the maximum extent practicable to protect water quality, and to satisfy the appropriate water quality requirements of the Montana Water Quality Act. As design progresses, the project team will coordinate with the local stormwater division to assess the applicability of MS4 requirements. The project scope is classified as “Development or Redevelopment” and, as a result, Permanent Erosion and Sediment Controls (PESC), including Low Impact Development (LID) practices, are required to be evaluated for practicability.

3.1.6 Stream Mitigation Requirements

The proposed project is not anticipated to impact any of the intermittent streams identified within the project area and, therefore, no stream mitigation would be required.

3.2 General Aquatic Species

None of the intermittent streams crossing the project area are documented by the Montana Fish, Wildlife & Parks MFISH database as containing fish (FWP 2020). These streams are all tributaries to the Yellowstone River, which is documented to contain an array of fish species. Similarly, a lake located just northeast of the Exxon Mobil refinery is documented to contain fish. Dry Creek and the unnamed tributary appear to have a hydraulic connection to this lake. Due to the scope of the project and general avoidance of the project area intermittent streams, aquatic organismal passage will not be affected by this project.

3.3 Wetlands

3.3.1 Methods

Information reported within this section was obtained from a combination of literature and database searches and on-site field investigation. Existing documentation reviewed for this section includes the following:

- USDA, Natural Resource Conservation Service (NRCS) (USDA 2019) Soil Survey Geographic (SSURGO) database for Yellowstone County Area, Montana.
- MTNHP Wetlands and Riparian Framework Database, which includes National Wetland Inventory Data (MTNHP 2018).

HDR staff conducted a field investigation in the project area on October 24, 2019, using the Routine Method as described in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), as updated by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (USACE 2010). To be considered a wetland, an area must have hydrophytic vegetation (vegetation adapted to wetland conditions), hydric soils, and wetland hydrology. Areas within the project area were investigated for wetland indicators. The October 24th field investigation was deemed to be within a reasonable range beyond the typical growing season. Local conditions were free from snow with full ground visibility and vegetation was identifiable and undamaged from any frost event.

3.3.2 Description of Delineated Wetland

One wetland was delineated on the east end of the project, south of I-90 located between the eastbound interstate lane and the Johnson Lane Interchange off ramp. The wetland measured 0.24 acre and is shown in **Figure 3-6**. **Table 3-1** provides a summary of the wetland characteristics, including information on location, Hydrogeomorphic (HGM) class, Cowardin class, wetland area within the project area, hydrology, and a brief narrative description. The Lockwood Irrigation District ditch and other intermittent stream crossings were investigated during the field visit in the immediate vicinity of the project for areas where legal access had been granted and no wetlands were identified. Site photos can be found in Appendix A.

A total of three sample data plots were established in the project area in the location of the Johnson Lane Interchange. Data plots WL-01 and UP-01 were wetland and upland data determination forms, respectively, associated with Wetland 1. A third data plot, UP-02, was established in a location down gradient of Wetland 1 on the north side of I-90 that exhibited hydrophytic vegetation (reed canary grass). The data plot was an exploratory point to test for wetland parameters based on site characteristics and, while hydrophytic vegetation and wetland hydrology were present, the soils did not meet the criteria to be considered hydric soils and the site was determined to be a non-wetland area. Refer to Appendix B for the completed USACE Wetland Determination Forms.

The MDT Montana Wetland Assessment Method (MWAM; MDT 2008) was used to determine the functional value and overall category rating for the project area wetland. The MWAM assesses individual wetlands and assigns ratings (low, moderate, high, or exceptional) and scores (0.1 to 1.0) to each of the 12 functions and values as identified in **Table 3-2**. Functional points are totaled and calculated as a percentage of total possible points for each wetland. Each wetland is then ranked according to the percentage and other criteria as either a Category I (highest quality), Category II, Category III, or Category IV (lowest quality). Refer to Appendix B for the completed MWAM form.

Figure 3-6. Delineated Wetland in the Project Area

Table 3-1. Wetland 1 Characteristics

Wetland Characteristic	Description
Wetland Number (WL)	WL-1
Reference Post (approx.)	455.3
HGM[1]	Depressional
Cowardin Classification[2]	PEM
MDT Wetland Category[3]	IV
Wetland Area with Project Area (acres)	0.24
Primary Source and Destination of Wetland Hydrology	Intermittent surface flows from unnamed stream; runoff from I-90, off-ramp, and Johnson Lane; upland surface flow. The intermittent stream connected to this wetland appears to have a downstream connection to a Waters of the U.S. The stream flows under the Town Pump and railroad and appears to have a surface connection with undeveloped floodplains and ponds along the Yellowstone River between the Exxon Mobil property and Johnson Lane.
Narrative Description	This is a depressional, emergent wetland located on the south side of I-90, between highway embankments. Dominant vegetation is reed canary grass (*Phalaris arundinacea*).

[1] MDT 2008
[2] Cowardin et al., 1979
[3] Refer to Appendix B for MDT Montana Wetland Assessment Form

Table 3-2. Summary of Wetland Function and Value Ratings and Functional Points for Wetland 1

Function and Value Variables[1]	WL-1
A. Listed/Proposed T&E Species Habitat	Low (0)
B. MT Natural Heritage Program Species Habitat	Low (0)
C. General Wildlife Habitat	Low (0.02)
D. General Fish Habitat	NA
E. Flood Attenuation	NA
F. Short and Long Term Surface Water Storage	NA
G. Sediment/Nutrient/Toxicant Removal	Mod (0.10)
H. Sediment/Shoreline Stabilization	NA
I. Production Export/Food Chain Support	Low (0.05)
J. Groundwater Discharge/Recharge	NA
K. Uniqueness	Low (0.02)
L. Recreation/Education Potential (bonus points)	NA
ACTUAL POINTS/POSSIBLE POINTS	0.80/6
PERCENT OF POSSIBLE SCORE ACHIEVED	13%
OVERALL CATEGORY RATING (FUNCTIONAL RATING)	**IV**
[1] Refer to Appendix B for MDT Montana Wetland Assessment Form.	

3.3.3 Potential Impacts

No impact on Wetland 1 is anticipated. The Johnson Lane Interchange is planned to be reconstructed as part of the Billings Bypass Project and would be unaffected by the proposed project. Because impact on Wetland 1 is not anticipated under the proposed project, no additional avoidance and minimization measures are necessary. A Section 404 permit is not anticipated and compensatory mitigation would not be required.

4 Species of Concern and Special Status Species

Montana species of concern (SOC) include native plants or animals that are considered to be “at risk” due to declining population trends, threats to their habitats, and/or restricted distribution. Designation of a species as a Montana SOC is not a statutory or regulatory classification. Instead, these designations provide a basis for resource managers and decision-makers to proactively direct limited resources to priority data collection needs and address conservation needs.

4.1 Methods

An Environmental Summary Report was provided by the MTNHP on September 10, 2019 for the project area vicinity that included approximately 5 square miles surrounding the project area. The report includes database information on sensitive animal species that have been documented in the vicinity of the project area. Species occurrence data is supplied to MTNHP by a variety of different wildlife and plant professionals, private, and/or government entities. The results are listed in **Table 4-1**, followed by a brief description on each species and potential impacts to these SOC as a result of the proposed project. Descriptions of SOC and observation information provided below are briefly summarized from information obtained from the MTNHP Environmental Summary Report (MTNHP 2019a) and the Montana Field Guides (MTNHP 2019c).

Table 4-1. Montana Natural Heritage Program Species of Concern with Documented Occurrences in the Project Area Vicinity

Species	MTNHP Ranking(s)[a]	General Habitat Requirements	Known Distribution in Project area Vicinity
Fish			
Sauger (*Sander canadensis*)	G5; S2	Large prairie rivers	Documented to occur in the Yellowstone River. Project area is located outside of general distribution.
Birds			
Bald Eagle *(Haliaeetus leucocephalus)*	G5; S4	Riparian forest	Documented to occur near the Yellowstone River (i.e, Two Moon Park, Earl Guss Park, and Audubon Society CBC site). Project area is located within general distribution.
Great Blue Heron (*Ardea herodias*)	G5; S3	Riparian forest	Documented to occur near the Yellowstone River (i.e, Two Moon Park, and Audubon Society CBC site). Project area is located within general distribution.
Pinyon Jay (*Gymnorhinus cyanocephalus*)	G5; S3	Open conifer forest	Documented to occur near the Yellowstone River (i.e, Audubon Society CBC site). Project area is located within general distribution.
Mammals			
Hoary bat *(Lasiurus cinereus)*	G5; S3	Riparian and forest	0.87 mile NW of the town of Lockwood. Project area is located within general distribution.
Little brown myotis *(Myotis lucifugus)*	G3; S3	Generalist	MDT Bridge No. P00016000+06721 (Highway 87 Bridge) within the project area.
Spotted bat *(Euderma maculatum)*	G4; S3	Cliffs and rock crevices	Parking garage in downtown Billings. Project area is located within general distribution.
Reptiles			
Greater short-horned lizard *(Phrynosoma hernandesi)*	G5; S3	Sandy/gravelly soils	Location unspecified; no records documented within the project area. Project area is located within general distribution.
Plains hog-nosed snake *(Heterodon nasicus)*	G5; S2	Friable soils	Billings, Lake Hills Golf Club, outside of project area. Project area is located within general distribution.
Snapping turtle (*Chelydra serpentina*)	G5; S3	Prairie rivers and streams	Yellowstone River, Exxon Wildlife Habitat Area. Project area is located within general distribution.
Spiny softshell (*Apalone spinifera*)	G5; S3	Prairie rivers and larger streams	Documented in Yellowstone River. Project area is located outside of general distribution.

Species	MTNHP Ranking(s)[a]	General Habitat Requirements	Known Distribution in Project area Vicinity
Western milksnake (*Lampropeltis gentilis*)	G4G5; S2	Rock outcrops	Exxon Mobil refinery area. Project area is located within general distribution.
Vascular Plants			
Bractless Hedge-hyssop (*Gratiola ebracteata*)	G4; S2	Wetlands/riparian	Location unspecified; no records documented within the project area. Project area is located within general distribution.
Sources: MTNHP 2019a			

4.2 Plants

4.2.1 Species observed/documented, general abundance, distribution, and habitat requirements

Bractless Hedge-hyssop

Bractless Hedge-hyssop (*Gratiola ebracteata*) is a glabrous annual with an erect, simple or branched stem that is 5-15 cm high. This species flowers in late June through August. This species' preferred habitat type is drying mud around ponds in the foothills and on the plains. Suitable habitat is lacking in the project area and this species is not expected to occur within the project limits.

4.2.2 Potential Impacts

This plant SOC is not likely to occur within the project limits and therefore the proposed project is anticipated to have no effect on this sensitive plant species.

4.2.3 Avoidance and Minimization Recommendations

No avoidance or minimization measures are recommended at this time.

4.3 Terrestrial Species

4.3.1 Species observed/documented, general abundance, distribution, and habitat requirements

Eleven terrestrial SOC, including three birds, three mammals, and five reptiles have been documented by the MTNHP in the project area vicinity as presented in **Table 4-1**. A discussion on each species and proposed project's potential impact on these identified species are provided below. Species descriptions are taken from information available from the MTNHP Montana Field Guides (MTNHP 2019b).

Birds

Bald Eagle

The Bald Eagle (*Haliaetus leucocephalus*) is primarily a species of riparian and lacustrine habitats (forested areas along rivers and lakes), especially during the breeding season. Important year-round

habitat in Montana includes wetlands, major water bodies, spring spawning streams, ungulate winter ranges and open water areas. Wintering habitat may include upland sites. Nesting sites are generally located within larger forested areas near large lakes and rivers where nests are usually built in the tallest, oldest, large diameter trees. The MTNHP database documents several Bald Eagle nests in the vicinity of the project area within the past ten years. Locations include the Billings CBC site MTBL (near Exxon Mobil, adjacent to the Yellowstone River), Two Moon Park (on the north side of the Yellowstone River), and Earl Guss Park (on Alkali Creek near downtown). All locations are greater than 0.5 mile from the project area.

Great Blue Heron

Great Blue Herons (*Ardea herodias*) are equally at home in urban wetlands as they are in wilderness settings. Most Montana nesting colonies are found in cottonwoods along major rivers and lakes, with a smaller number occurring in riparian ponderosa pines and on islands in prairie wetlands. Great Blue Herons tend to nest in the largest trees available. The MTNHP database documents Great Blue Herons at the Billings CBC site MTBL and Two Moon Park. Suitable habitat is lacking in the project area and this species is not expected to occur within the project limits.

Pinyon Jay

The Pinyon Jay is a year-round resident of central Montana. In Montana, they occur in low-elevation open conifer forest including ponderosa pine and limber pine-juniper woodlands. They are omnivores, feeding on pine seeds, wild fruits, agricultural grains, arthropods, lizards, snakes, and nestling birds or small mammals. Recent observations of Pinyon Jay were made at the Billings CBC site MTBL. Limited suitable habitat for this species exists within the immediate project area.

Mammals

Hoary Bat

The hoary bat is migratory in Montana with recorded observations only in the summer, from early June through September. During the summer hoary bats occupy forested areas, both conifer and hardwood, as well as riparian corridors. Hoary bat has been reported over a broad elevation range in Montana (1,900 – 9,100 feet); however, probably most common at lower elevations. Their food preference is moths but are reported to consume other insects including beetles, true bugs, leafhoppers, lacewings, and true flies.

In the vicinity of the project area, the hoary bat was last observed 0.87 mile northwest of Lockwood in July of 2009. Limited suitable habitat for this species exists within the immediate project area.

Little Brown Myotis

The little brown myotis is the most common bat species in Montana and can be found year-round in Montana but may be partially migratory because summer populations are much higher than winter populations. This species is found in a variety of habitats over a wide range of elevations and commonly forages over water. Roost sites during summer include attics, barns, bridges, snags, loose bark, and bat houses; maternity roosts in Montana are primarily buildings. Their food preference are insects, including gnats, mosquitoes, crane flies, beetles, wasps, and moths.

Little brown myotis was most recently documented in July 2009 0.87 mile northwest of Lockwood. In 2004, little brown myotis was observed at a roost under the Highway 87 Bridge (Bridge No.

P00016000+06721) near the project area in July and October of that year. None of the bridge structures located within the project area have been documented as a bat roost site. Given its general habitat requirements and past occupation under the Highway 87 Bridge adjacent to the project area, this species is likely to occupy the project area on occasion.

Spotted Bat

Limited information exists for the spotted bat in Montana. This species is likely migratory due to lack of observations during winter. They are known to occupy coniferous stands in summer and migrate to lower elevations in late summer/early fall. Spotted bats have most commonly been observed in open arid habitats dominated by juniper and sagebrush, sometimes intermixed with limber pine or Douglas-fir, or in grassy meadows in ponderosa pine savannah. Cliffs, rocky outcrops, and water are other attributes of sites where spotted bats have been found. Their food preference is moths and, to a lesser extent, beetles.

The spotted bat was most recently documented in 2010 in a downtown Billings parking garage at 1st Avenue and N. 27th Street, approximately 2 miles west of project area. Limited suitable habitat for this species exists within the immediate project area.

Reptiles

Greater Short-horned Lizard

The greater short-horned lizard is a year-round resident of eastern Montana. Habitat use in Montana is thought to include ridge crests between coulees, and in sparse, short grass and sagebrush with sun-baked soil. Food preference for this species includes mostly ants and beetles, as well as spiders, snails, sowbugs, and other invertebrates. Adult lizards are diurnal and active during warmer daylight periods of the day.

No site-specific observations are documented by the MTNHP in the project area; however, the project area is located within general distribution of this species. Suitable habitat for this species is limited in the immediate project area.

Plains Hog-nosed Snake

Limited information exists for Montana on the migration and habitat characteristics of the plains hog-nosed snake. This species is a year-round resident of eastern Montana. They have been reported in areas of sagebrush-grassland habitat and near pine savannah in grassland underlain by sandy soil (MTNHP 2019c). To infer habitat preference in Montana based on other locations, this species likely occupies arid areas, farmlands, and floodplains, particularly if containing gravelly or sandy soils. This snake burrows typically and, less often, can be found under rocks or debris. The plains hog-nosed snake diet likely includes toads, as well as lizards and reptile eggs, and to a lesser extent frogs, salamanders, snakes, birds, and mammals.

The MTNHP most recently documented observation of this species was in 2003 at the Lake Hills Golf Club several miles north of the project area. Suitable habitat for this species is limited in the immediate project area.

Spiny Softshell

Limited information exists for Montana on the migration and habitat characteristics of the spiny softshell. In general, this species occupies large rivers and tributaries, and more specifically, river

impoundments, lakes, ponds along rivers, pools along intermittent streams, bayous, irrigation canals, and oxbows (MTNHP 2019c). It usually is found in areas with open sandy or mud banks, a soft bottom, and submerged brush and other debris. They burrow into the bottoms of permanent water bodies, either shallow or relatively deep (4.75 to 4.8 feet), where they spend winter. Food sources include crayfish, aquatic insects, and fishes, but mollusks, worms, isopods, amphibians, carrion, and vegetation also are eaten.

The MTNHP most recently and nearest documented observation of this species was in 2013 on the Yellowstone River along a side channel near Johnson Lane and the concrete plant. Suitable habitat for this species is limited in the immediate project area.

Western Milksnake

Limited information exists for Montana on the migration and habitat characteristics of the western milksnake. Milksnakes have been reported in areas of open sagebrush-grassland habitat and ponderosa pine savannah with sandy soils, most often in or near areas of rocky outcrops and hillsides or badland scarps, sometimes within city limits (MTNHP 2019c). Food sources include mostly small vertebrates, including snakes, lizards, reptile eggs, birds, bird eggs, small mammals (especially mice), and occasionally insects and worms.

The western milksnake was most recently observed in the vicinity of the project area in the Sacrifice Cliff area in May 2011 and in 2009 near the Exxon Mobil refinery. Suitable habitat for this species is limited in the immediate project area.

4.3.2 Potential Impacts

In general, potential impacts on SOC as a result of the proposed project are not anticipated. This is due to the project area lacking suitable habitat, low probability of SOC occurrence, and minimal impacts anticipated for vegetation. Impacts on vegetation that may provide nesting, perching, and foraging habitat for bird SOC would be minor and limited to areas immediately adjacent to the existing highway. The potential for impact on tree nesting or breeding populations would be negligible provided the inclusion of the standard MBTA special provision and their ability to disperse from the construction area to ample adjacent habitat.

Three bat SOC potentially occur in the project area and surrounding vicinity. No bat roosts have been identified within the immediate project area. If night-time work were to occur, temporary construction disturbance from light, odor, noise, and vibration could discourage bats from potentially using the existing bridges as a temporary roost site. Disturbance will be avoided because work will likely occur primarily during daytime hours.

No impact on individual Bald Eagle or nests is anticipated. Temporary construction noise is unlikely to disrupt Bald Eagle behavior or reproduction because the proposed project is not within direct line of sight of an active nest, and is not within half a mile of a nest site, concentrated foraging area, or communal roost site. A distance of one-half mile is the recommended distance between potentially disturbing activities and Bald Eagle nests (Montanan Bald Eagle Working Group 2010).

4.3.3 Avoidance and Minimization Recommendations

All of the above-listed bird SOC are protected under the MBTA. The standard MDT MBTA special provision will be included in the final construction bid documents to avoid and minimize potential

impacts on migratory birds resulting from vegetation removal (see Section 2.3.3 for more information). No additional avoidance and minimization measures are recommended at this time.

4.4 Aquatic Species

4.4.1 Species observed/documented, general abundance, distribution, and habitat requirements

Sauger

The sauger is native to Montana east of the Continental Divide and inhabits large turbid rivers and muddy shallows of lakes and reservoirs throughout their range (MTNHP 2019c). Historical distribution on the Yellowstone River has included the mainstem and its tributaries downstream of the Clark Fork. Sauger are listed in Montana as a S2 SOC concern by the MTNHP and FWP. This designation indicates that sauger are at risk because of very limited and/or potentially declining population numbers, range and/or habitat, making the species vulnerable to extirpation in the state. Habitat loss and the presence of migratory barriers are the primary causes of the reduced distribution of sauger in Montana.

The sauger is documented in the Yellowstone River within the project area vicinity (MTNHP 2019a; FWP 2019a). The majority of the sauger fishery, however, occurs downstream of Huntley, MT (MDT 2011). No spawning locations have been identified within the project area vicinity.

4.4.2 Potential Impacts

The proposed project would have no impact on sauger because no direct impacts would occur to the waterways occupied by this species.

4.4.3 Avoidance and Minimization Recommendations

No avoidance and minimization measures are recommended at this time.

5 Threatened and Endangered Species Preliminary Biological Assessment

Section 7 of the Endangered Species Act (ESA) [16 U.S.C. 1531 *et seq*.] outlines the procedures for Federal interagency cooperation to protect federally-listed species and conserve designated critical habitats. Section 7 requires Federal agencies to determine the effects of the proposed action on threatened, endangered, and proposed species and to consult with the USFWS for concurrence on the determination of effect. This section provides the Preliminary Biological Assessment of the proposed action's effect on federally-listed species and designated critical habitats.

5.1 Methods

Information reported within this section was obtained from a review of literature and database searches and on-site field investigation. A list of federally-listed endangered, threatened, proposed, and candidate species to be considered for this project was generated based on the data obtained from the USFWS and MTNHP. The December 12, 2019 publication of Endangered, Threatened,

Proposed and Candidate Species by Montana County available through the USFWS's Montana Ecological Field Office (USFWS 2019a) was reviewed to determine the federally-listed species potentially occurring in Yellowstone County. Additionally, the project area geography was uploaded into the USFWS Information for Planning and Consultation (IPaC) online tool to identify listed species and critical habitats that may occur in the project area vicinity. Federally-listed species potentially occurring in Yellowstone County are listed in **Table 5-1** along with their respective federal status, and potential for occurrence in the project area.

Table 5-1. Federally Listed Species Occurring in Yellowstone County, MT

Common Name	Scientific Name	Status[a]	Potential Occurrence in Project Area Vicinity[b]?	Critical Habitat in Project Area?
Whooping Crane	*Grus americana*	LE	No	No
Red Knot	*Calidris canutus rufa*	LT	No	No

Sources: USFWS 2019a, USFWS 2019b
[a] LE = Listed Endangered; LT = Listed Threatened
[b] Potential occurrence determination was conservatively made based on a custom IPaC report (USFWS 2019b), species occurrence information (MTNHP 2019a), and suitable habitat in project area.

The custom IPaC report identified only Red Knot (*Calidris canutus rufa*) as potentially affected in the project area (USFWS 2019b). As previously noted in Section 4.0, the MTNHP query area included five square miles surrounding the project area within which no federally-listed species are documented as occurring by the MTNHP (MTNHP 2019a).

5.2 Action Area and Environmental Baseline

The action area for the proposed project is defined as "all areas to be affected directly or indirectly by the proposed action and not merely the immediate area directly adjacent to the action" (50 CFR §402.02). Project components that pose potential effects include construction noise and clearing and grading resulting from construction activities. For purposes of this assessment, the project action area includes only a terrestrial action area; no aquatic action area is necessary because surface water resources are limited to three intermittent streams and one irrigation ditch and no federally-listed aquatic species occurring in the project area vicinity. The terrestrial action area includes a distance of approximately one-half mile extending from the eastbound and westbound lanes of I-90 and the associated interchanges (approximately one mile total width) from RP 452.5 to RP 455.3.

Regulations implementing the ESA (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, State or private actions and other human activities in the action area. Representative project site photographs are provided in Appendix A. The project is located in Sections 25, 26, and 35 of Township 1 North, Range 26 East and Sections 19 and 30 of Township 1 North, Range 27 East, Montana Principle Meridian.

Environmental baseline conditions for terrestrial and aquatic areas within the project area are described in previous sections above. Section 2 describes terrestrial resources, including general habitat and vegetation. Section 3 describes aquatic resources and project area wetlands.

5.3 Preliminary Biological Assessment

5.3.1 Whooping Crane

Species status, distribution, habitat requirements, reasons for decline

The USFWS listed the Whooping Crane (*Grus americana*) as threatened with extinction in 1967 (32 FR 4001) and endangered in 1970—both listings were "grandfathered" into the Endangered Species Act of 1973. Critical habitat was designated in 1978. No critical habitat is designated in Montana. Several experimental, non-essential populations occur in U.S. but none in Montana.

Wild populations of Whooping Cranes currently exist in only three locations and in captivity at 12 sites (USFWS 2019c). In 2010, the total wild population was estimated at 383. There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, and winters in coastal marshes in Texas at the Aransas National Wildlife Refuge.

The Whooping Crane is known to fly through Montana during both spring and fall migration (MTNHP 2019c). Recorded observations in the state suggest spring migration dates begin as early in the year as April and fall departure dates occur as late as the end of October.

The Whooping Crane has been observed in the marsh habitat present at Medicine Lake National Wildlife Refuge (Sheridan County) and Red Rock Lakes National Wildlife Refuge (Beaverhead County) (MTNHP 2019c). Other observations of individual birds in eastern Montana have occurred in grain and stubble fields, wet meadows, wet prairie habitat, and freshwater marshes that are usually shallow and broad with safe roosting sites and nearby foraging opportunities.

The Whooping Crane inhabits wetlands and upland grain fields. Studies show Whooping Crane feed primarily in a variety of croplands (MTNHP 2019c). In wetland areas, the Whooping Crane generally probes in the mud or sand in or near shallow water, but may also take prey from the water column, or pick items from the substrate. During summer the Whooping Crane feeds on insects, crustaceans, and berries. No breeding habitat exists in Montana.

Reasons for Decline

The historical decline in and limited recovery of Whooping Crane populations is attributed to multiple factors. Human settlement has altered and destroyed habitat and has reduced the quantity and quality of freshwater inflows to critical habitat. Hunting was at one point a primary reason for the Whooping Crane's historical decline but in recent years has become less of a concern. Human activity near Whooping Crane breeding grounds can cause displacement due to the species' sensitivity to disturbance. Additional factors of lesser importance are disease, predation, food availability, pollution, climate change, and loss of genetic diversity (CWS 2007).

Occurrence in Action Area

Only two observations within the last 20 years have been documented by the MTNHP in Yellowstone County: an October 02, 2005 observation at the Buffalo Mirage Fishing Access Site on the Yellowstone River, approximately 20 miles west of the project area and an April 13, 2010 observation near I-94 Huntley interchange, approximately 9 miles east of the project area (MTNHP 2019c). Suitable habitat for Whooping Crane is extremely limited in the project area. Given the level of development and interstate traffic occurring in the project area and this species' aversion to

human disturbance, it is highly unlikely that Whooping Crane occur in the action area. Minimal areas of cropland of sufficient size exist within the action area. Marginal areas of suitable habitat do exist within the larger project action area, primarily within the Yellowstone River riparian corridor; however, use of these areas would be extremely unlikely and limited to brief stopovers during migration.

Potential Impact Analysis

Whooping Crane use of the project area is expected to be extremely rare to non-existent. Potentially suitable migratory habitat along the Yellowstone River riparian corridor is present within the project action area; however, the proposed project would have no direct impact on suitable habitat for this species because none is present within the immediate project area. A rare occurrence in the project area would be limited to a brief migratory stop over and not a long-term visit.

In the very unlikely event Whooping Crane passed through the project area during construction, potential impacts on this species would be temporary and indirect, predominantly attributed to construction-related noise. Because there is no breeding habitat in the state, the species has never been recorded in the immediate project area, and is not anticipated to occur there, the proposed project is not anticipated to affect Whooping Crane.

Preliminary Determination of Effect

Because of the reasons previously described, for this preliminary assessment it is determined that the project would have ***no effect*** on Whooping Crane.

Conservation Measures

No impact on Whooping Crane is anticipated and, therefore, no conservation measures are necessary.

5.3.2 Red Knot

Species status, distribution, habitat requirements, reasons for decline

The Red Knot (*Calidris canutus rufa*) was listed as threatened by the USFWS on January 12, 2015 (79 FR 73705 73748). No critical habitat has been designated in Montana or elsewhere in the U.S. No evidence of breeding or overwintering exists for Montana.

The Red Knot migrates annually between its breeding grounds in the Canadian Arctic and several wintering regions, including the Southeast United States, the Northeast Gulf of Mexico, northern Brazil, and Tierra del Fuego at the southern tip of South America. Researchers have documented migration patterns for Red Knots wintering along the Texas coast use the Central Flyway (passing over eastern Montana) on both north- and south-bound migrations (MTNHP 2019c).

Migratory stopovers of this long-distance migrant in Montana are infrequent and occur at larger wetlands scattered across the state. Sixty percent of documented stopovers occurred at Freezeout Lake (Teton County), Benton Lake National Wildlife Refuge (Cascade County), and Lake Bowdoin National Wildlife Refuge (Philips County) (MTNHP 2019c). In total, there are approximately 50 observations documented for individuals stopping at Montana wetlands, with only 0-4 for any given year since the 1970s, and 60 percent of observations have occurred in May associated with northward migration (MTNHP 2019c). Only one occurrence has been documented in Montana since 2005.

General migratory habitat characteristics preferred by the Red Knot include tidal flats and shorelines, and general breeding habitat includes far northern latitude tundra during the summer (Audubon Society 2019). For the rare migrant passing through Montana, the preferred habitat appears to be large, contiguous wetland complexes, typically many thousands of acres in size, containing substantial open water and shoreline. These open water habitat requirements are necessary to provide invertebrates, and particularly small mollusks, which is the major food source for the Red Knots (MTNHP 2019c).

In the 2015 listing decision, the USFWS cited the primary factors threatening the species as loss of breeding and nonbreeding habitat, disruption of natural predator cycles on breeding grounds, reduced prey availability throughout the nonbreeding range, and increasing frequency and severity of mismatches in the timing of the birds' annual migratory cycle relative to favorable food and weather conditions (MTNHP 2019c).

Occurrence in Action Area

The Red Knot has not been documented in Yellowstone County for more than 40 years. Only two historical observations have been documented by the MTNHP within Yellowstone County. One observation was recorded in August 1974 in the town of Broadview, MT, approximately 30 miles northwest of the project area and the other was recorded in May 1975 in Lockwood, MT, in the vicinity of the proposed project (MTNHP 2019c).

Breeding does not occur in the action area and no suitable migratory habitat exists in the action area. Due to lack of suitable habitat for this species and general decline of documented occurrences in Montana over the past several decades, the Red Knot is not expected to occur in the project action area.

Potential Impact Analysis

Red Knot use of the project area is expected to be extremely rare to non-existent. Suitable habitat does not exist in the immediate project area or the larger project action area. For these reasons, the proposed project is not anticipated to affect Red Knot.

Preliminary Determination of Effect

For this preliminary assessment, it is determined that the project would have ***no effect*** on Red Knot.

Conservation Measures

No impact on Red Knot is anticipated and, therefore, no conservation measures are necessary.

5.4 Potential Cumulative Effects Analysis

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this preliminary biological assessment (USFWS 1998b). Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA (USFWS 1998b). A cumulative impacts analysis examines the additive effect of the proposed action’s residual impact (i.e., impacts remaining after applying avoidance and minimization measures) in relation to the residual impacts generated by past, present, and reasonably foreseeable actions within the cumulative analysis area.

The following list includes MDT projects located in the vicinity of the project action area:

- I-90 Yellowstone R – Billings
- Billings Bypass (Johnson Lane Interchange)
- 1st Ave/Exposition Drive Intersection
- 1st Ave N – Billings
- Airport Rd/Main St intersection improvements

The proposed I-90 Yellowstone R – Billings project is adjacent to the proposed Lockwood Interchange project and extends southward from the Lockwood Interchange to the North 27th Street Interchange. Whooping Crane and Red Knot were evaluated for impacts in the August 2017 Preliminary Biological Assessment wherein a “no effect” determination was rendered for both species.

The Billings Bypass is a proposed new principle arterial roadway connecting I-90 east of Billings with Old Highway 312 that includes a new river crossing over the Yellowstone River. The purpose of the project is to improve access and mobility in the eastern portion of Billings. A Record of Decision was issued in July 2014 identifying the Mary Street Option 2 as the preferred alternative. A “may affect, not likely to adversely affect” determination was made relative to the endangered Whooping Crane. No conservation measures were identified in the ROD with respect to threatened or endangered species. Effects from the proposed Billings Bypass project potentially affecting the Whooping Crane include minor impact on potential migratory habitat and potential for disturbance during construction.

Because of the extreme unlikelihood of species occurrence in the project area, residual impacts resulting from the proposed project on federally-listed species are not anticipated. Other ongoing actions occurring in the cumulative analysis area that could influence habitat include private parcel development in potentially suitable habitat. No additional future federal, state, local, or private actions of regional significance that are reasonably certain to occur have been identified within the vicinity of the proposed project. No long-term cumulative impacts are anticipated.

6 References

Audubon Society. 2019. Audubon Guide to North Amercian Birds. Red Knot. Accessed November 29, 2019. Accessed at <https://www.audubon.org/field-guide/bird/red-knot>.

CWS (Canadian Wildlife Service) and USFWS. 2007. International recovery plan for the whooping crane. Ottawa: Recovery of Nationally Endangered Wildlife (RENEW), and U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 162 pp.

Environmental Laboratory. 1987. Corps of Engineers wetland delineation manual. Wetlands Research Program Technical Report Y-87-1. Department of the Army. Vicksburg, Mississippi.

FWP (Montana Fish, Wildlife & Parks). 2020. MFISH Database. Accessed at <http://fwp.mt.gov/gis/maps/mFish/?zoomFeatures=%7BlayerName:%22STREAMS%22,features:%5B%7BLLID:%221123386455677%22%7D%5D,fadeOutTimer:4%7D>. Accessed on February 3, 2020.

Montana Bald Eagle Working Group. 2010. Montana Bald Eagle Management Guidelines: An Addendum to Montana Bald Eagle Management Plan, 1994, Montana Fish, Wildlife and Parks, Helena, Montana.

MDT (Montana Department of Transportation). 2008. Montana Wetland Assessment Methodology. Prepared by PBS&J for MDT. March 2008.

MDT. 2011. Biological Resources Report for Billings Bypass, NCPD 56(55), CN 4199. Prepared by David Evans and Assoc., Inc. November 2011.

MDT. 2017. Biological Resource Report / Preliminary Biological Assessment for the I-90 Yellowstone R – Billings Project, NHPB 90-8(176)450, UPN 7972000. Prepared by HDR, Inc. August 23, 2017.

MDT. 2018. Statewide Animal Carcass GIS geodatabase. Obtained on October 25, 2018.

MDT. 2020. Standard and Supplemental Specifications for Road and Bridge Construction. 2020 Edition.

MTNHP (Montana Natural Heritage Program). 2018. Wetland and Riparian Framework GIS Geodatabase. Downloaded May 7, 2018.

MTNHP. 2019a. Environmental Summary Report. For Latitude 45.78041 to 45.82866 and Longitude -108.40266 to -108.47966. Retrieved on 9/10/2019.

MTNHP. 2019b. Natural Heritage Map Viewer. Generalized Observations. Accessed at < http://mtnhp.org/mapviewer/>.

MTNHP. 2019c. Montana Field Guides. Accessed at <http://fieldguide.mt.gov/default.aspx>.

MSL (Montana State Library). 2019. Montana Cadastral Framework for Yellowstone County. Accessed at < https://mslservices.mt.gov/geographic_information/data/datalist/datalist_Details.aspx?did={5771f6be-4a32-498a-a47b-d7f0f51251ff}>. Downloaded on March 11, 2019.

USACE (US Army Corps of Engineers). 2005. Regulatory Guidance Letter: Ordinary High Water Mark Identification. http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf. December 7, 2005.

USACE. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region. May 2010.

US Climate Data. 2019. Climate and Weather Averages for Billings, Montana. Accessed at < https://www.usclimatedata.com/climate/billings/montana/united-states/usmt0031>. Accessed on January 25, 2020.

USDA (U.S. Department of Agriculture). 2019. Natural Resources Conservation Service. Soil Survey Geographic Data (SSURGO) for Yellowstone County. Downloaded January 3, 2019.

USEPA (U.S. Environmental Protection Agency). 2012. Level IV Ecoregions of Montana GIS shapefile. Published 2012. http://archive.epa.gov/wed/ecoregions/web/html/mt_eco.html.

USFWS (U.S. Fish and Wildlife Service). 1998. Endangered Species Consultation Handbook. Procedures For Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act. March 1998.

USFWS. 2019a. Montana Ecological Field Office Endangered, Threatened, Proposed and Candidate Species by Montana County. Published December 12, 2019. Accessed at <http://www.fws.gov/montanafieldoffice/Endangered_Species/Listed_Species/countylist.pdf> . Accessed on February 11, 2020.

USFWS. 2019b. Information for Planning and Consultation (IPaC) Custom Report for Project Area. Accessed at <https://ecos.fws.gov/ipac/>. Accessed on September 27, 2019.

USFWS. 2019c. Environmental Conservation Online System (ECOS). Accessed at <https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=3681>. Accessed on September 27, 2019.

USGS (U.S. Geological Survey). 2018. USGS National Hydrography Database (NHD) Montana Spatial Data Infrastructure (MSDI) geospatial data. Montana Natural Resource information System. Montana State Library. Downloaded April 20, 2018.

Woods, Alan J., Omernik, James, M., Nesser, John A., Shelden, J., Comstock, J.A., Azevedo, Sandra H., 2002, Ecoregions of Montana, 2nd edition (color poster with map, descriptive text, summary tables, and photographs). Map scale 1:1,500,000.

APPENDIX A: Representative Site Photos

REPRESENTATIVE SITE PHOTOS

Photo 1: Wooded area near MRL Railroad and Old US-87, Lockwood Interchange

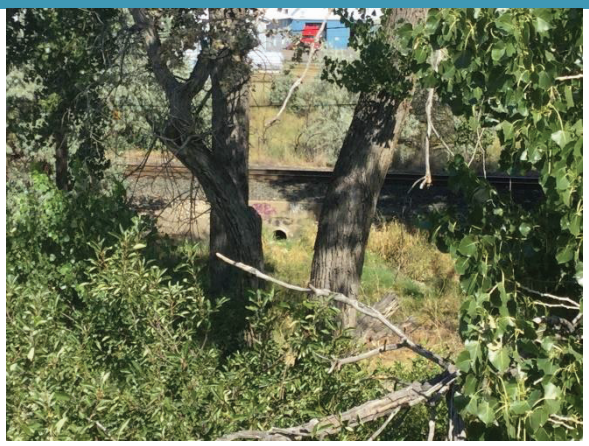


Photo 2: Depressional area on MRL property (no access)

Photo 3: Lockwood Irrigation ditch

Photo 4: : Lockwood Irrigation ditch

Photo 5: Stormwater swales near Old US-87 and Lockwood Interchange

Photo 6: Undeveloped field near Lockwood Interchange

Photo 7: I-90 and Old US-87 overpass

Photo 8: Swales on NW side of Lockwood Interchange

Photo 9: Box Elder Creek, north side of North Frontage Road

Photo 10: North Frontage Road near Dry Creek

WETLAND DELINEATION PHOTOS

Photo 11: Data plot WL-01, Wetland 1.

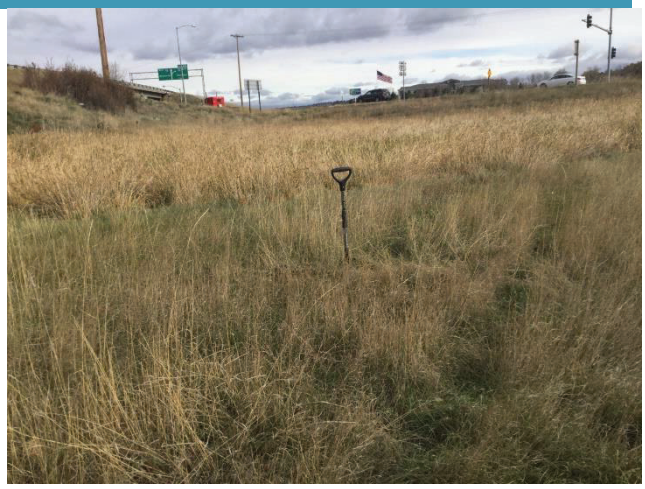


Photo 12: UP-01, Upland paired plot to WL-01, Wetland 1 in background

Photo 13: Data plot WL-01, Wetland 1.

Photo 14: Data plot WL-01 hydric soils

Photo 15: Overview UP-01 and Wetland 1.

Photo 16: Overview of UP-02 and unnamed intermittent stream within the Johnson Lane Interchange.

APPENDIX B: USACE Wetland Determination Data Forms
Montana Wetland Assessment Method (MWAM) Form

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lockwood Interchange City/County: Yellowstone Sampling Date: 10/24/2019

Applicant/Owner: MDT State: MT Sampling Point: WL-01

Investigator(s): Stephanie Griffin Section, Township, Range: T1N, R27E Section 19

Landform (hillside, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): LRR G Lat: 45.813985 Long: -108.41446 Datum: NAD 1983

Soil Map Unit Name: Tc- Thurlow Clay Loam NWI classification: PEM

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

Are Vegetation____ , Soil____ , or Hydrology____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation____ , Soil____ , or Hydrology____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes x No ____

Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** x **No** ____

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Phalaris arundinacea*	90	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 10

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: 100.0% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

Dominated by Reed Canary Grass. In between off ramp and interstate I-90 NE Embankment. Two culverts North, one Culvert on South.

SOIL

Sampling Point: WL-01

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					Loamy/Clayey	Roots
6-12	10YR 3/1	100					Loamy/Clayey	
12-18	10YR 2/1	100					Loamy/Clayey	Roots

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- x Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Very Dark. No redox features observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- X Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- x Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): 0
Water Table Present?	Yes x	No ___	Depth (inches): 18
Saturation Present? (includes capillary fringe)	Yes x	No ___	Depth (inches): 12

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

Soil very moist. Water in the hole @18"/ Saturated at 12". Meets primary and secondary indicators.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lockwood Interchange City/County: Yellowstone Sampling Date: 10/24/2019

Applicant/Owner: MDT State: MT Sampling Point: UPW01

In-estigator(s): Stephanie Griffin Section, Township, Range: T1R, 2NE Section 19

Landform (hillside, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR, MLRA): L, G Lat: 43.615599 Long: W108.414438 Datum: RAD 1983

Soil Map Unit Name: TcW Thurlow Clay Loam NWI classification: RA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes 7 No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes 7 No ____

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

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

Hydrophytic Vegetation Present?	Yes ____	No 7	**Is the Sampled Area within a Wetland?**	**Yes ____ No 7**
Hydric Soil Present?	Yes ____	No 7		
Wetland Hydrology Present?	Yes ____	No 7		

Remarks:
Flattened area within bottom of RE Embankment between off ramp and Interstate. Paired upland plot to WLW01.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____	= Total Cover	
Herb Stratum (Plot size: 3=radius)			
1. *Bromus inermis*	10	No	UPL
2. *Poa pratensis*	80	Yes	FACU
3. *Agropyron cristatum*	3	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	93	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	= Total Cover	

% Bare Ground in Herb Stratum 3

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: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	80	x 4 =	320
UPL species	13	x 5 =	65
Column Totals:	93	(A)	385 (B)

Prevalence Index = B/A = 4.18

Hydrophytic Vegetation Indicators:

____ 1 – Rapid Test for Hydrophytic Vegetation

____ 2 – Dominance Test is > 50%

____ 3 – Prevalence Index is ≤3.0[1]

____ 4 – Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ≤

Remarks:
Upland grass species. Does not meet any hydrophytic vegetation indicators.

SOIL

Sampling Point: UP-01

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5YR 4/2	100					Loamy/Clayey	Roots
5-20	2.5YR 4/3	100					Loamy/Clayey	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR F)**
- ___ 1 cm Muck (A9) **(LRR F, G, H)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR I, J)**
- ___ Coast Prairie Redox (A16) **(LRR F, G, H)**
- ___ Dark Surface (S7) **(LRR G)**
- ___ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No Hydric Soil Indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

No Wetland Hydrology Indicators

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Lockwood Interchange City/County: Yellowstone Sampling Date: 10/24/2019

Applicant/Owner: MDT State: MT Sampling Point: UPW02

In-estigator(s): Stephanie Griffin Section) Township) , ange: T1R) , 2NE Section 19

Landform (hillside) terrace) etc.): Swale Local relief (concae) con-e7) none): Conca-e Slope (%): 1

Su%region (L, ,): L, , G Lat: 43.b14N25 Long: W0b.4133b2 Datum: RAD 19b8

Soil Map Unit Rame: TcWThurlow Clay Loam R6 I classification: RA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes 7 Ro (If no) e7plain in , emarks.)

Are Vegetation) Soil) or Hydrology significantly distur%ed? Are "Rormal Circumstances" present? Yes 7 Ro

Are Vegetation) Soil) or Hydrology naturally pro%lematic? (If needed) e7plain any answers in , emarks.)

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

Hydrophytic Vegetation Present?	Yes 7	Ro	**Is the Sampled Area within a Wetland?** Yes No 7
Hydric Soil Present?	Yes	Ro 7	
6 etland Hydrology Present?	Yes 7	Ro	

, emarks:

Xlattened area within %ottom of SE Em%ankment %etween off ramp and Interstate. Has hydrophitic -egetation and wetland hydrology indicators %ut Ro Hydric Soil Indicators. Cul-erts on R and S end.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
8.			
4.			
		FTotal Co-er	
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
8.			
4.			
3.			
		FTotal Co-er	
Herb Stratum (Plot size: 3=radius)			
1. *Phalaris arundinacea*	b3	Yes	XAC6
2.			
8.			
4.			
3.			
5.			
N.			
b.			
9.			
10.			
	b3	FTotal Co-er	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		FTotal Co-er	

x Bare Ground in Her%Stratum 13

Dominance Test worksheet:

Rum%er of Dominant Species That Are OBL) XAC6) or XAC: 1 (A)

Total Rum%er of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL) XAC6) or XAC: 100.0x (A/B)

Prevalence Index worksheet:

Total x Co-er of:		Multiply %y:	
OBL species	0	7 1 F	0
XAC6 species	b3	7 2 F	1N0
XAC species	0	7 8 F	0
XACU species	0	7 4 F	0
UPL species	0	7 3 F	0
Column Totals:	b3 (A)		1N0 (B)
Pre-alence Inde7 F B/A F			2.00

Hydrophytic Vegetation Indicators:

___ 1 W, apid Test for Hydrophytic Vegetation

' 2 WDominance Test is >30x

___ 8 WPre-alence Inde7 is ≤8.0[1]

___ 4 WMorphological Adaptations[1] (Pro-ide supporting data in , emarks or on a separate sheet)

___ Pro%lematic Hydrophytic Vegetation[1] (E7plain)

[1]Indicators of hydric soil and wetland hydrology must %e present) unless distur%ed or pro%lematic.

Hydrophytic Vegetation Present? Yes ' No

, emarks:

, eed Canary Grass Dominated

SOIL

Sampling Point: UP-02

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

1 eptD uin(Desc	h atriM Color umoistc	)	x eRoMdeatFres Color umoistc	)	%ype[T]	Lo([2])	%eMFre	x emarks
0-5	T0Yx 4/T	T00					Loamy/Clayey	
5-20	2.5Yx 3/2	T00					Loamy/Clayey	

[T]%ype: C=Con(entration, 1 =1 epletion, x h =x eRF(eR h atriM, CS=CovereR or CoateR SanR Grains. [2]Lo(ation: PL=Pore Lining, h =h atriM

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol uATc
- ___ Histi(EpipeRon uA2c
- ___ Bla(k Histi(uA4c
- ___ HyRrogen SFlfiRe uA3c
- ___ StratifieR Layers uA5c **(LRR F)**
- ___ T (m h F(k uA9c **(LRR F, G, H)**
- ___ 1 epleteR BeloO 1 ark SFrfa(e uATTc
- ___ %Di(k 1 ark SFrfa(e uAT2c
- ___ SanRy h F(ky h ineral uSTc
- ___ 2.5 (m h F(ky Peat or Peat uS2c **(LRR G, H)**
- ___ 5 (m h F(ky Peat or Peat uS4c **(LRR F)**
- ___ SanRy GleyeR h atriMuS3c
- ___ SanRy x eRoMuS5c
- ___ StrippeR h atriMuS6c
- ___ Loamy h F(ky h ineral ucTc
- ___ Loamy GleyeR h atriMuc2c
- ___ 1 epleteR h atriMuc4c
- ___ x eRoM1 ark SFrfa(e uc6c
- ___ 1 epleteR 1 ark SFrfa(e uc7c
- ___ x eRoM1 epressions ucwc
- ___ HigD Plains 1 epressions ucT6c **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ___ T (m h F(k uA9c **(LRR I, J)**
- ___ Coast Prairie x eRoMuAT6c **(LRR F, G, H)**
- ___ 1 ark SFrfa(e uS7c **(LRR G)**
- ___ HigD Plains 1 epressions ucT6c **(LRR H outside of MLRA 72 & 73)**
- ___ x eRF(eR Verti(ucTwc
- ___ x eR Parent h aterial uc2Tc
- ___ Very SDalloO 1 ark SFrfa(e uc22c
- ___ I tDer uEMplain in x emarksc

[4]bnRi(ators of DyRropDyti(vegetation anR OetlanR DyRrology mFst Xe present, Fnless RistFrXeR or proXlemati(.

Restrictive Layer (if observed):

%ype: _____

1 eptD uin(Desc: _____

Hydric Soil Present? **Yes** ____ **No** N

x emarks:

Wo HyRri(Soil bnRi(ators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ SFrfa(e q ater uATc
- ___ HigD q ater %aXle uA2c
- ___ SatFration uA4c
- ___ q ater h arks uBTc
- ___ SeRiment 1 eposits uB2c
- ___ 1 rift 1 eposits uB4c
- ___ Algal h at or CrFst uB3c
- ___ bron 1 eposits uB5c
- ___ bnFnRation VisiXle on Aerial bmagery uB7c
- ___ q ater-StaineR Leaves uB9c
- ___ Salt CrFst uBTTc
- ___ AzFati(bnverteXrates uBT4c
- ___ HyRrogen SFlfiRe I Ror uCTc
- ___ 1 ry-Season q ater %aXle uC2c
- ___ I MRi?eR x Di?ospDeres on Living x oots uC4c **(where not tilled)**
- ___ Presen(e of x eRF(eR bron uC3c
- ___ %Din h F(k SFrfa(e uC7c
- ___ I tDer uEMplain in x emarksc

Secondary Indicators (minimum of two required)

- ___ SFrfa(e Soil Cra(ks uB6c
- ___ Sparsely VegetateR Con(ave SFrfa(e uBwc
- M 1 rainage Patterns uBT0c
- ___ I MRi?eR x Di?ospDeres on Living x oots uC4c **(where tilled)**
- ___ CrayfisD BFrroOs uCwc
- ___ SatFration VisiXle on Aerial bmagery uC9c
- ___ GeomorpDi(Position u1 2c
- N dAC-WeFtral %est u1 5c
- ___ drost-Heave HFmmo(ks u1 7c **(LRR F)**

Field Observations:

SFrfa(e q ater Present8 Yes ____ Wo M 1 eptD uin(Desc: _____

q ater %aXle Present8 Yes ____ Wo M 1 eptD uin(Desc: _____

SatFration Present8 Yes ____ Wo M 1 eptD uin(Desc: _____

uin(lFRes (apillary fringec

Wetland Hydrology Present? **Yes** N **No** ____

1 es(riXe x e(orReR 1 ata ustream gaFge, monitoring Oell, aerial pDotos, previoFs inspe(tionsc, if availaXle:

x emarks:

%Oo (FIverts on tDe nortD anR soFtD enRs. h eets se(onRary inRi(ators.

MDT Montana Wetland Assessment Form (revised March 2008)

1. **Project Name:** Lockwood Interchange **2**. **MDT Project #:** STPX 90-8(191)450 **Control #: 9588000**

3. **Evaluation Date:** 11/14/2019 **4**. **Evaluator(s):** Stephanie Griffin; Jon Schick **5**. **Wetlands/Site #(s):** Wetland 1

6. **Wetland Location(s): i**. **Legal:** T1N, R27E, Section 19;
ii. Approx. Stationing or Mileposts: RP 455.3
iii. Watershed: 10070007 **Watershed Name, County:** Middle Yellowstone, Yellowstone

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

8. **Wetland size:** 0.24 acres (measured)

9. **Assessment area (AA):** 0.24 acres (measured)

10. **Classification of Wetland and Aquatic Habitats in AA**

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
R	EM	NA	TE	100

Abbreviations: (*see manual for definitions*)

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Mineral Soil Flats (**MSF**), Organic Soil Flats (**OSF**), Lacustrine Fringe (**LF**);

Cowardin Classes: Rock Bottom (**RB**), Unconsolidated bottom (**UB**), Aquatic Bed (**AB**), Unconsolidated Shore (**US**), Moss-lichen Wetland (**ML**), Emergent Wetland (**EM**), Scrub-Shrub Wetland (**SS**), Forested Wetland (**FO**)

Modifiers: Excavated (**E**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**)

Water Regimes: Permanent / Perennial (**PP**), Seasonal / Intermittent (**SI**), Temporary / Ephemeral (**TE**)

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)
ABUNDANT

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

Conditions within AA	*Predominant conditions adjacent to (within 500 feet of) AA*		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is ≤15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is ≤30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is ≤15%.	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is ≤30%.	moderate 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.): Wetland 1 is located between I-90 bridge embankment and interstate off ramp at Johnson Lane in Lockwood, MT.

ii. Prominent noxious, aquatic nuisance, & other exotic vegetation species: Some Canadian thistle and field bindweed present

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: This a low lying area with culverts on either end that come from under Johnson Lane and travel under I-90.

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

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

Comments: Dominated by Reed Canary Grass

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):
Primary or critical habitat (**list species**)
Secondary habitat (**list species**)
Incidental habitat (**list species**)
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	.8M	.7M	.3L	.1L	**0L**

Sources for documented use (e.g. observations, records, etc): USFWS IPaC 2019, MTNHP Environmental Summary 2019

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

i. AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):
Primary or critical habitat (**list species**) NA
Secondary habitat (**list species**) NA
Incidental habitat (**list species**) Hoary bat, little brown myotis, spotted bat
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
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented use (e.g. observations, records, etc.): MTNHP Environmental Summary 2019

14C. **General Wildlife Habitat Rating:**

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

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

Minimal (based on any of the following [check]):
X few or no wildlife observations during peak use periods
X 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: Minimal wildlife habitat in project limits. No wildlife signs during October 2019 site visit.

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

Type of Fishery: Cold Water (**CW**)_____ Warm Water (**WW**)_____ **Use the CW or WW guidelines in the user manual to complete the matrix**

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

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

Sources used for identifying fish sp. potentially found in AA: *FWP MFISH does not document fish in this intermittent unnamed stream*

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

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

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

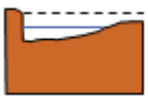
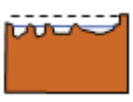
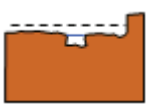
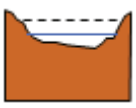
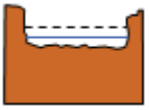
14E. **Flood Attenuation:** (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, mark **__NA** and proceed to 14F.)

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

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

Entrenchment ratio (ER) estimation – see User's Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width)
Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.

4ft	**/ 3ft**	**=**	**1.33**
Flood-prone width	*Bankfull width*		*Entrenchment ratio (ER)*

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

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)? **__NO__** **Comments:** Wetland 1 subject to seasonal flooding with stream carries water

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, mark **___NA** 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:

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, mark ___ **NA** 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: Sediment and nutrients from overland flow from roadways.

14H Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, mark **X** **NA** 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: Assumed to be NA due to intermittent flows of stream. Wetland 1 does not occur on or within the banks of a stream.

14I. Production Export/Food Chain Support:

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

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

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

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

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? ___ *If yes, add 0.1 to the score in **ii** above.*

iv. Final Score and Rating: 0.2L **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)

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

Comments:

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	.7M	.6M	.6M	.4M	.3L	.3L	.2L	**.1L**

Comments:

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

i. Is the AA a known or potential rec./ed. site: (circle) ____ (if 'Yes' continue with the evaluation; if 'No' then mark **_X_ NA** and proceed to the overall summary and rating page)

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

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

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

Comments:

General Site Notes

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0.0	1		
B. MT Natural Heritage Program Species Habitat	L	0.1	1		
C. General Wildlife Habitat	L	0.1	1		
D. General Fish Habitat	NA	-	-		
E. Flood Attenuation	L	0.2	1		*
F. Short and Long Term Surface Water Storage	L	0.2	1		*
G. Sediment/Nutrient/Toxicant Removal	M	0.4	1.0		*
H. Sediment/Shoreline Stabilization	NA	-	-		
I. Production Export/Food Chain Support	L	0.2	1		*
J. Groundwater Discharge/Recharge	NA	-	-		
K. Uniqueness	L	0.1	1		
L. Recreation/Education Potential (bonus points)	NA	-	NA		
Totals:		1.3	8.0		
Percent of Possible Score			16%		

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

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

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

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

OVERALL ANALYSIS AREA RATING: IV