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Montana Department of Transportation
2701 Prospect
PO Box 201001
Helena MT 59620-1001

Greg Gianforte, Governor
Malcolm "Mack" Long, Director

February 24, 2021

Lucia Olivera, Division Administrator
Federal Highway Administration
585 Shepard Way
Helena, MT 59601-9785

Subject: Request for Concurrence of Continued Validity of FEIS/ROD
Billings Bypass – BBP Yellowstone River
NCDP-MT 56(55)
CN: 4199003

Dear Lucia Olivera,

Due to availability and type of funding, the Montana Department of Transportation (MDT) will implement Phase I of the Billings Bypass Project as six separate construction projects. The second project to be constructed as part of Phase 1 is the Yellowstone River project segment. This segment of the Billings Bypass is located east/northeast of the Heights area of the City of Billings, within Yellowstone County, Montana. The project begins at the newly proposed intersection with Five Mile Road. The project then proceeds east and southeast approximately 0.7 mile, crossing over the Yellowstone River with a newly constructed bridge. This project has been awarded and is currently under construction.

The Billings Bypass Final Environmental Impact Statement (FEIS) was signed by your agency on March 18, 2014, and the Final Record of Decision (ROD) was signed by your agency on July 25, 2014. A Re-evaluated Environmental Impact Statement (REIS) and a Revised ROD were prepared in 2019 to address design modifications to the proposed Yellowstone River Bridge and changes to lane configurations within the Yellowstone River segment of the Billings Bypass. The Revised ROD was signed by your agency on December 18, 2019.

The Yellowstone River segment (4199003) of the Billings Bypass is currently under construction. To complete the construction of the bridge, a haul road is necessary. This haul road traverses a former gravel operation and requires additional material to build a suitable haul road. Part of this haul road is within the adjoining segment of the Billings Bypass – Railroad Overpass segment (4199005). The footprint of the haul road is along the proposed alignment of the Billings Bypass roadway in the Railroad Overpass segment, is within the footprint of the corridor evaluated in the FEIS, and it does not require the acquisition of additional right-or-way. The construction of the haul road would involve the placement of material and it is necessary to ensure that this material is suitable as embankment material for the Railroad Overpass segment. To complete the construction of the haul road the project limits for the Yellowstone River

segment need to be extended and this would encompass the start of the Railroad Overpass project.

Based on the analysis for the proposed haul road and of the Yellowstone River/Railroad Overpass segments of the Billings Bypass, MDT concludes that the requirements of both the National and Montana Environmental Policy Acts (NEPA and MEPA) are met for the Yellowstone River project segment through a Re-evaluated Environmental Impact Statement (REIS) as described in 23 Code of Federal Regulations (CFR) 771.129(b) rather than a Supplemental Environmental Impact Statement (SEIS) as described in 23 CFR 771.130.

The following re-evaluation discusses new information or circumstances relevant specifically to the haul road and ensures that current environmental requirements are addressed. The re-evaluation focuses on the changes to the design, the potential for new impacts, and new project-related issues that have arisen since approval of the Billings Bypass FEIS/ROD in 2019.

As described in Chapter 1.3 of the FEIS, the purpose of the Billings Bypass project is to improve access and connectivity between Interstate 90 (I-90) and Old Highway 312 and to improve mobility in the eastern area of Billings. The purpose of and need for the Railroad Overpass project segment of the Billings Bypass has not changed since the approval of the FEIS/ROD.

DESCRIPTION OF CHANGED CONDITIONS

Design Refinement/Change 1: Haul Road

Project Limits

To accommodate the construction of the proposed haul road the Yellowstone River segment project's limits need extended to start at Station 123+40, connecting back to the existing end of the Yellowstone River segment at Station 143-70. An aerial showing the extents of the existing Yellowstone River segment along with the proposed haul location is provided in Attachment 1. This extended area is within the Railroad Overpass segment and was assessed as part of the pending Railroad Overpass segment FEIS re-evaluation. The footprint of the haul road is along the proposed alignment of the roadway for the Railroad Overpass segment, is within the footprint of the corridor evaluated in the Billings Bypass FEIS, and it does not require the acquisition of additional right-or-way. This change was necessitated by the expanded gravel pit operations that lowered the grade by several feet south of the Yellowstone River prior to the start of construction on the Yellowstone River segment, the suspension of active gravel mining (including dewatering) and completion of reclamation activities, and the corresponding rise in groundwater levels that will overtop the current access road used for the construction of the Yellowstone River Bridge.

Embankment Design

The proposed haul road is along the designed alignment of the Billings Bypass roadway for the Railroad Overpass segment and this embankment material will eventually support the permanent pavement section of the Billings Bypass roadway. The construction of the proposed haul road sections will require traversing native and undocumented fill (crusher fines or crusher reject material) subgrades. The haul road navigates the remnants of an old aggregate crusher pit

contiguous to the Yellowstone River. Since extensive earthwork operations occurred at the crusher pit, substrates of undocumented fill may be found throughout the project area. Fills are required along the entire haul road alignment, with the thickest centerline fills of approximately 12 to 14 feet ranging from Station 127+00 to 134+00. A cross-section of the haul road showing current grade at the bottom of the gravel pit as well as the layout of the road with respect to right-of-way is shown in Figure 1.

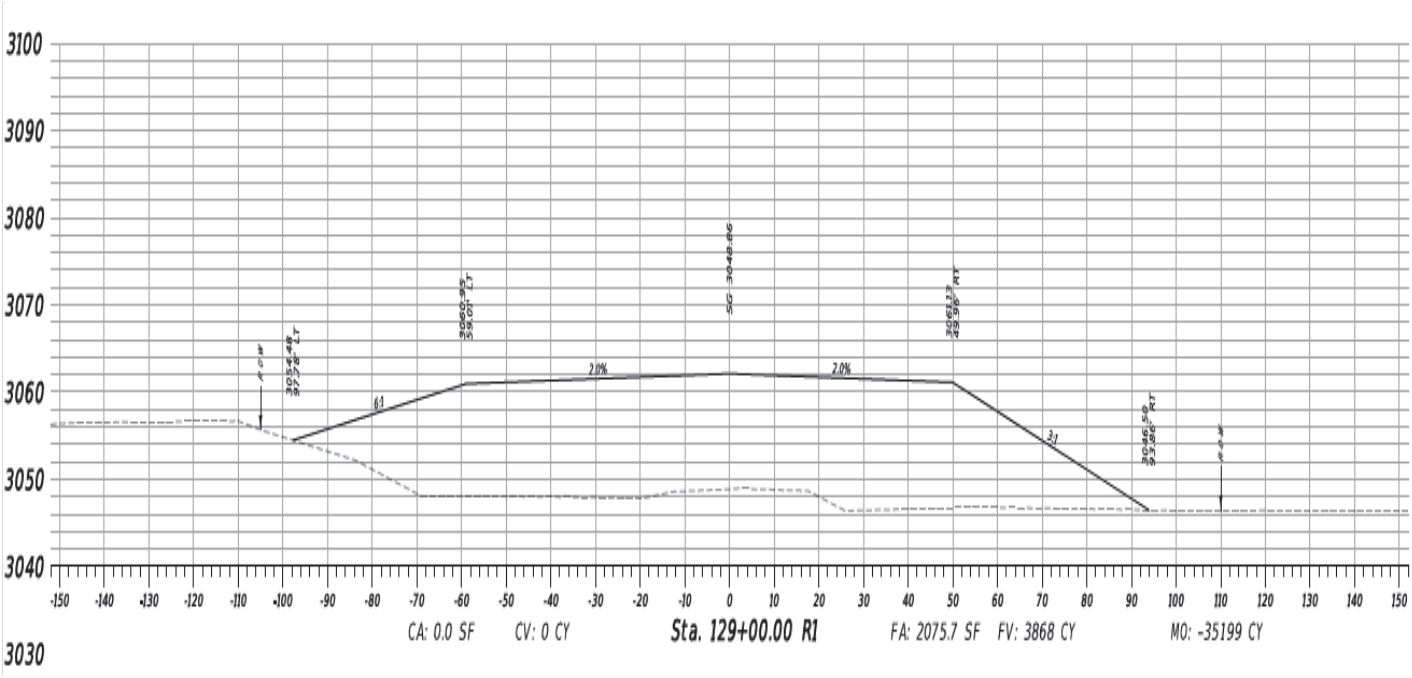


Figure 1. Haul Road Cross-Section

Based on the haul road design, fill slopes are predominately at slope ratios of 4H:1V or 3H:1V. Shallower fills (6H:1) are proposed at the areas where there is less fill. These fills for road embankment material must consist of a well-graded sand and gravel, free of organic and other deleterious material, meeting the AASHTO M 145 requirements for A-1-a or A-1-b group classifications. The haul road surfacing will consist of approximately 135,000 cubic yards of pit run material.

A copy of the technical memo for the haul road is included in Attachment 2.

Environmental Change 1: Biological Resources Update

Threatened and Endangered Species and State Species of Concern

A Final Biological Resources Report/Biological Assessment (BRR/BA) was completed for the Billings Bypass EIS in November 2011. Two addenda to that report were completed in June 2012 and August 2013. The 2011 BRR/BA Report and the 2012 report addendum served as a basis for informal consultation with the US Fish and Wildlife Service (USFWS) concerning potential effects of future Billings Bypass projects on federally listed species. In a letter dated July 26, 2012, the USFWS concurred with MDT's determination that the Billings Bypass project is not likely to adversely affect whooping crane (*Grus Americana*), would have no effect on the

black-footed ferret (*Mustela nigripes*), and is not likely to jeopardize the existence of the greater sage-grouse (*Centrocercus urophasianus*) and Sprague's pipit (*Anthus spragueii*). The August 2013 addendum was completed to confirm there had been no changes to the USFWS Yellowstone County list of threatened and endangered species since the 2012 addendum and confirm the USFWS determination was still current.

Due to the Billings Bypass project now being split into six construction projects, and due to the time lapse since the August 2013 addendum, BRR/BA Addendum Reports are being prepared for each project segment as updates to the original BRR/BA and addenda. A BRR/BA Addendum Report was completed for the Railroad Overpass project on October 29, 2020. The area of analysis included the proposed haul road location. According to the Railroad Overpass Addendum Report, the greater sage-grouse, black-footed ferret, and Sprague's pipit have been removed from the June 2020 list of endangered, threatened, proposed, and candidate species for Yellowstone County. Red knot (*Calidris canutus rufa*) has been added to the Yellowstone County list. Whooping crane remains on the list.

The report also states that there are no records of whooping crane or red knot breeding in the state. They are known to migrate through Montana on occasion in the spring and fall as they head to breeding territories in northern Canada and the Arctic, respectively. There are three observations for whooping crane within a 30-mile radius of the proposed Railroad Overpass project over the last 100 years. The nearest observation was documented more than 10 miles to the northeast as a fly-over in April 2010. One observation of red knot is documented less than 1.0 mile southwest of the proposed Railroad Overpass project limits. This individual was a transient (non-breeding and short-term) documented in 1975, and not seen since. Two other red knot observations in the general geographic area are greater than 30 miles from the project vicinity. Neither the whooping crane nor red knot would be anticipated in the Railroad Overpass project area, as limited-to-no-appropriate habitat is present. Therefore, a ***No Effect*** determination has been made for the proposed Railroad Overpass project activities, including the proposed haul road, for both the whooping crane and red knot.

The Railroad Overpass 2020 addendum includes an updated state Species of Concern recorded occurrence list from Montana Natural Heritage Program (MTNHP) and updated data on bald eagle nests in the area. The 2020 list identified 14 wildlife Species of Concern and one plant Species of Concern within three miles of the Railroad Overpass Project; this area includes the proposed haul road location. Eleven of these Species of Concern were discussed in the 2011 BRR/BA and 2014 FEIS. No additional impacts or concerns related to the 11 original species have been identified since the 2011 BRR/BA and 2014 FEIS. Of the remaining three wildlife species and one plant species not discussed in the 2011 BRR/BA and 2014 FEIS, suitable habitat is found within the Railroad Overpass project vicinity for listed species. Permanent vegetation impacts would occur within the proposed construction limits, with both upland and wetland habitat being impacted. Direct mortality to some species may occur due to inability to disperse during construction. Temporary noise related impacts would also occur during construction.

2019 Montana Fish, Wildlife, and Parks (FWP) observation data on Bald Eagles shows several documented occurrences of Bald Eagle and Bald Eagle nests along the Yellowstone River Corridor; however, no Bald Eagle nests or occurrences have been documented within 0.25 miles

of the project limits. MTNHP data shows a nesting Bald Eagle was documented in May 2016 a little over 0.25 miles northwest of the Railroad Overpass northern limits. FWP noted that this nest has since blown down. Therefore, additional minimization measures and timing restrictions for the Railroad Overpass segment, including the proposed haul road, are not proposed.

The Railroad Overpass BRR/BA Addendum Report dated October 29, 2020, is included in Attachment 3.

Wetlands

A wetland delineation was completed in 2011 as part of the developing Billings Bypass FEIS. As more than five years has passed since the original wetland delineation was conducted and to ensure all wetlands were identified within the refined design alignment for the Railroad Overpass project, a wetland delineation, following US Army Corps of Engineers (USACE) delineation guidelines, was conducted in May 2017. During the 2017 wetland delineation effort, the 2011 wetland boundaries were updated to current conditions. No additional wetlands along this segment of the bypass, including the area of the proposed haul road location, were identified.

MDT concludes that the impacts of the proposed haul road location on wetlands is consistent with the findings of the FEIS and ROD.

RE-EVALUATION

The scope of this re-evaluation includes updated design/environmental information for the haul road. This re-evaluation includes a review of the Billings Bypass FEIS and ROD for changes in previously identified environmental resources and impacts and any mitigation commitments associated with the environmental changes.

Resource Category Re-Evaluation

The following resource categories were previously examined in the Billings Bypass FEIS and have been re-evaluated in the context of the changes to project with respect to the proposed haul road. New or updated information, where applicable, is provided. Table 1 provides an overview of the resource category and whether a change in impact or a change in mitigation has occurred in the Yellowstone River/Railroad Overpass segments along the proposed haul road. Resource categories with changed conditions are described in greater detail below.

Table 1. Re-evaluation of Resource Categories

Resource Category	Change in Impact? Yes/No	Change in Mitigation? Yes/No	Discussion
Traffic Operations	No	No	No additional traffic operation impacts have been identified since the FEIS/ROD.
Access	No	No	The haul road would not alter the conclusion in the FEIS/ ROD and is consistent with the findings in the FEIS/ROD. No other concerns related to access have been identified since the FEIS/ROD.

Resource Category	Change in Impact? Yes/No	Change in Mitigation? Yes/No	Discussion
Safety	No	No	No additional safety impacts have been identified since the FEIS/ROD.
Pedestrian and Bicycle Considerations	No	No	No changes in pedestrian and bicycle safety have occurred since the FEIS/ROD.
Land Use	No	No	No changes in land use have occurred since the FEIS/ROD.
Parks and Recreation	No	No	No additional parks or recreational facilities have been identified in the project area since the FEIS/ROD.
Social	No	No	No changes to social conditions have been identified since the FEIS/ROD.
Economic	No	No	No changes to the economic conditions have been identified since the FEIS/ROD.
Environmental Justice	No	No	No potential disproportional impacts to low-income or minority populations have been identified since the FEIS/ROD.
Right-of-Way	No	No	The right-of-way proposed is consistent with the findings of the FEIS/ROD.
Railroad	No	No	No changes have been identified since the FEIS/ROD.
Utilities	No	No	Impacts to utilities are consistent with the findings in the FEIS/ROD.
Historic and Cultural Resources	No	No	The proposed haul road remains within the Area of Potential Affect (APE) outlined in the FEIS and is consistent with the findings of the FEIS/ROD.
Section 4(f) and Section 6(f) Resources	No	No	No changes in impacts to Section 4(f) or Section 6(f) resources have occurred since the FEIS/ROD.
Visual Resources	No	No	No changes to visual resources have been identified since the FEIS/ROD.
Noise	No	No	No changes in noise impacts have been identified since the FEIS/ROD.
Farmland	No	No	No changes to farmland impacts have occurred since the FEIS/ROD.
Irrigation	No	No	No changes to irrigation impacts have occurred since the FEIS/ROD.
Energy	No	No	No changes related to energy have occurred since the FEIS/ROD.
Air Quality	No	No	No changes related to air quality have been identified since the FEIS/ROD.

Resource Category	Change in Impact? Yes/No	Change in Mitigation? Yes/No	Discussion
Hazardous Materials	Yes	No	A review of current aerials and the Montana DEQ database show that Gravel Pits 12a-12c as indicated in the FEIS/ROD have primarily been reclaimed. However, the footprint for Gravel Pit 12 has been greatly expanded just south of the Yellowstone River. The Railroad Overpass segment, including parts of the haul road that would be incorporated into the Yellowstone River segment, would impact the far west/southwest portion of this gravel pit. No additional hazardous materials sites where identified. Under MDT's right-of-way agreement the gravel pit owner would stop mining within the project corridor and leave the pit as is. The construction of the proposed haul road in the vicinity of the former gravel pit requires additional suitable material that would serve as road base for the future roadway. The change in impact to hazardous materials would not affect the overall findings made in the FEIS/ROD and would not be considered "significant" in terms of context and intensity.
Water Resources and Water Quality	No	No	An unnamed drainage, shown as part of wetland D8 in the FEIS, was delineated as open/surface water in the 2017 wetland delineation. The proposed Railroad Overpass roadway alignment, including the proposed haul road, would be constructed in the vicinity of the unnamed drainage but would not have a permanent impact on the unnamed drainage. The proposed construction limits are east of the channel and no encroachment/realignment of the channel is proposed to accommodate the new roadway alignment. Since 2014, one new groundwater well has been drilled within the project vicinity. The well is not within construction limits and would not be impacted. This update does not result in a change in impacts or concerns related to water resources and water quality since the FEIS/ROD.
Wild and Scenic Rivers	No	No	No changes have been identified since the FEIS/ROD.
Waterbody Modifications	No	No	An unnamed drainage, shown as part of wetland D8 in the FEIS, was delineated as open/surface water in the 2017 wetland delineation. The proposed Railroad Overpass roadway alignment, including the proposed haul road, would be constructed in the vicinity of the unnamed drainage but would not have a permanent impact on the unnamed drainage. The proposed construction limits are east of the channel and no encroachment/realignment of the channel is proposed to accommodate the new roadway alignment. This update does not result in a change in impacts or concerns related to waterbody modifications since the FEIS/ROD.

Resource Category	Change in Impact? Yes/No	Change in Mitigation? Yes/No	Discussion
Floodplains	No	No	The haul road will not require an amendment to the CLOMR permit or floodplain permit for the Yellowstone River/Railroad Overpass segments per conversation with the Yellowstone County Floodplain Administrator. No additional floodplain impacts have been identified since the FEIS/ROD.
Wetlands	No	No	A wetland delineation was conducted in May 2017. There are not any wetlands identified within the construction limits of the haul road. No additional wetland impacts have been identified since the FEIS/ROD.
Vegetation	No	No	No additional vegetation impacts have been identified since the FEIS/ROD.
Wildlife and Aquatic Resources	No	No	No additional impacts related to wildlife and aquatic resources have been identified since the FEIS/ROD.

Resource Category	Change in Impact? Yes/No	Change in Mitigation? Yes/No	Discussion
State Species of Concern and Special Status Species	Yes	Yes	A BRR/BA Addendum Report was completed for Railroad Overpass on October 29, 2020. The area of analysis includes the proposed haul road location. The report includes an updated state Species of Concern recorded occurrence list from MTNHP and updated data on bald eagle nests in the area. The MTNHP list identified 14 wildlife Species of Concern and one plant Species of Concern within three miles of the Railroad Overpass Project. These include 11 species that were discussed in the FEIS; and three new wildlife species and one plant species, which were not discussed in the FEIS. Of the remaining three wildlife species and one plant species not discussed in the 2011 BRR/BA and 2014 FEIS, some may occur within the Railroad Overpass project limits, as suitable habitats for these species are present within the general vicinity of the project. The project limits would likely be primarily used for forage and migration. Permanent vegetation impacts would occur within the proposed construction limits, with both upland and wetland habitat being impacted. For smaller species, direct mortality may occur due to disturbance of habitat and inability to disperse during construction. Temporary noise related impacts would also occur during construction. The 2019 Montana FWP observation data on Bald Eagles, provided by MTNHP, shows several documented occurrences of Bald Eagle and Bald Eagle nests along the Yellowstone River Corridor; however, no Bald Eagle nests or occurrences have been documented within 0.25 miles of the project limits. MTNHP data shows a nesting Bald Eagle was documented in May 2016 a little over 0.25 miles northwest of the Railroad Overpass northern limits. FWP noted that this nest has since blown down. Therefore, additional minimization measures and timing restrictions for the Railroad Overpass segment, including the proposed haul road, are not proposed. The change in impacts to state Species of Concern and Special Status Species are consistent with the findings in the FEIS/ROD and would not be considered “significant” in terms of context and intensity.

Resource Category	Change in Impact? Yes/No	Change in Mitigation? Yes/No	Discussion
Threatened and Endangered Species	Yes	No	A BRR/BA Addendum Report was completed for Railroad Overpass segment on October 29, 2020. The area of analysis includes the proposed haul road location. According to the report, the greater sage-grouse, black-footed ferret, and Sprague's pipit have been removed from the June 2020 list of endangered, threatened, proposed, and candidate species for Yellowstone County. Red knot has been added to the Yellowstone County list. Whooping crane remains on the list. There are no records of either of these species breeding in the state. They are known to migrate through Montana on occasion in the spring and fall as they head to breeding territories in northern Canada and the Arctic, respectively. There are three observations for whooping crane within a 30-mile radius of the proposed Railroad Overpass project over the last 100 years. The nearest observation was documented more than 10 miles to the northeast as a fly-over in April 2010. One observation of red knot is documented less than 1.0 mile from the proposed Railroad Overpass project limits. This individual was a transient (non-breeding and short-term) documented in 1975. No additional sightings within the project vicinity have been made since 1975. Two other red knot observations in the general geographic area are greater than 30 miles from the project vicinity. Neither whooping crane nor red knot would be anticipated in the Railroad Overpass project area, as limited-to-no-appropriate habitat is present. Therefore, a ***No Effect*** determination has been made for the proposed Railroad Overpass project activities, including the proposed haul road, for both the whooping crane and red knot. The change in impacts to Threatened and Endangered species is consistent with the findings in the FEIS/ROD and would not be considered "significant" in terms of context and intensity.

CONCLUSION

Through this re-evaluation, MDT has determined that no substantive changes along the Yellowstone River/Railroad Overpass project segments specifically along the proposed haul road have occurred since the FEIS and ROD were signed in 2019. The design and environmental updates described in this re-evaluation would not affect the ability of the Billings Bypass to meet the stated purpose as described in the FEIS and ROD. MDT has determined that the impacts of these design and environmental updates are not, individually or cumulatively, significant nor significantly different from those impacts described in the FEIS and ROD.

MDT has determined that the design and environmental updates would have no effect on the ultimate decision documented in the ROD and that approving this updated NEPA/MEPA evaluation is consistent with 23 CFR 771.

REVIEWED/AUTHORIZED
By Tom Martin at 2:00 pm, Feb 25, 2021

Date: _____

Tom Martin, P.E.
Environmental Services Bureau Chief
Montana Dept. of Transportation

HEIDY BRUNER
Digitally signed by HEIDY BRUNER
Date: 2021.02.25 15:37:25 -07'00'

Date: _____

Federal Highway Administration

Electronic copies:

Rod Nelson, P.E.	Billings District Administrator
Tom Martin, P.E.	Environmental Services Bureau Chief
Tom Gocksch, P.E.	Environmental Services Bureau Engineering Section Supervisor
Damian Krings, P.E.	Highways Engineer
Rob Stapley	Right-of-Way Bureau Chief
Fred Bente	Consultant Design
Darrin Reynolds	Engineering Construction Contraction Bureau Chief
Lisa Hurley	Fiscal Programming Section Supervisor
Tommy Griffeth	Billings District Project Development Engineer
Heidy Bruner, P.E.	FHWA Environmental Specialist
Montana Legislative Branch Environmental Quality Council (EQC)	

Copies: Environmental Services Bureau File

Attachment 1: Proposed Haul Road Aerial

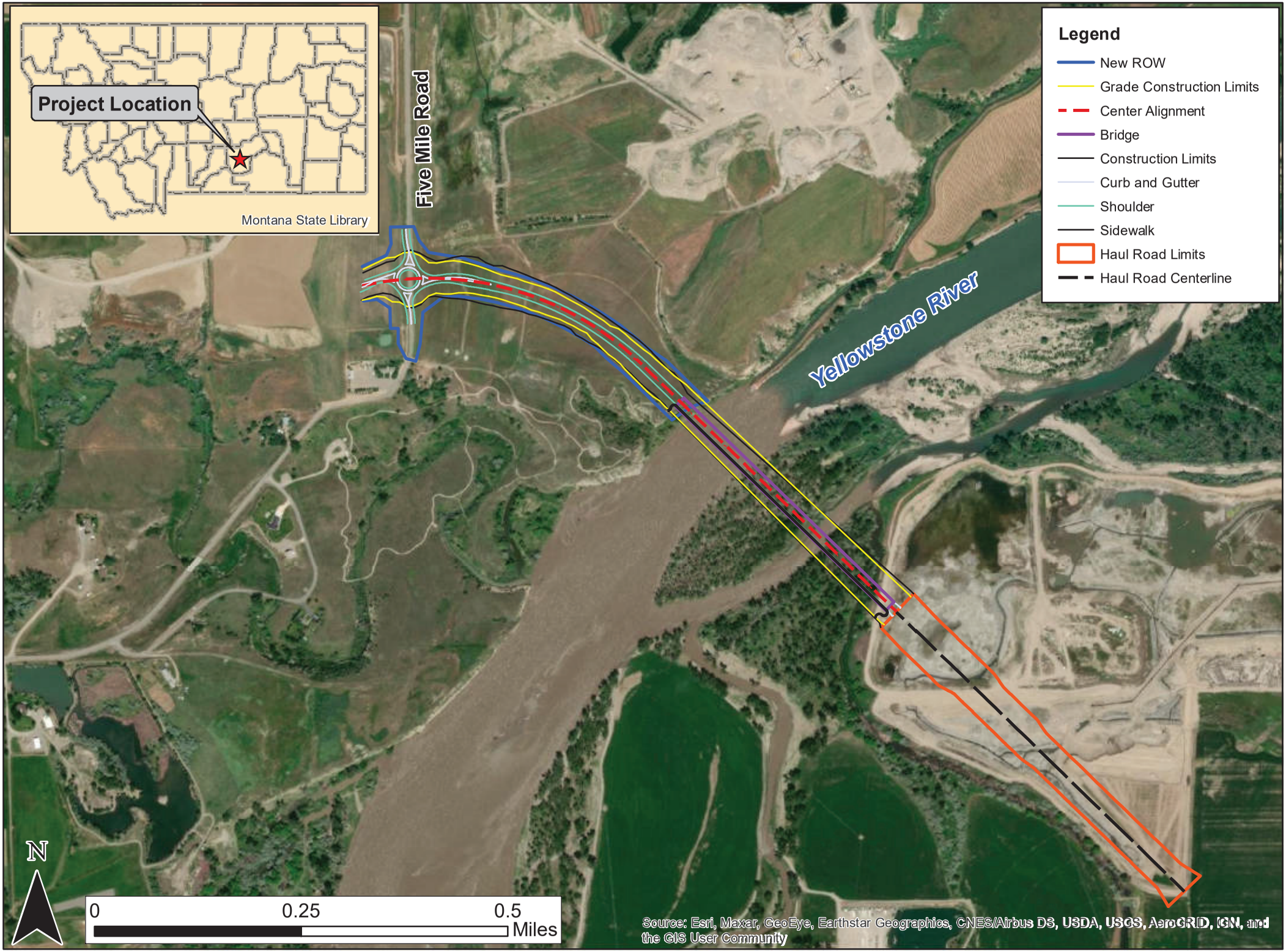


Figure 1. Project Limits and Vicinity - Including Haul Road

Attachment 2: Technical Memo for the Billings Bypass – Yellowstone River Haul Road – Station 123+40 to 143+70

DOWL

TECHNICAL MEMORANDUM

TO: Jams Stevenson, Engineering Project Manager, MDT

FROM: Dennis Russell, P.E. and David Barrick, P.E.

DATE: February 1, 2021

PROJECT: Billings Bypass – Yellowstone River Haul Road – Station 123+40 to 143+70

YELLOWSTONE RIVER HAUL ROAD - 4199005

The intent of this memo is to provide geotechnical recommendations of a proposed haul road from Station 123+40 to 143+70 that foreshadows the proposed roadway alignment of the Billings Bypass Project in Billings, Montana. The proposed haul road embankment will eventually support the permanent pavement section of the Billings Bypass roadway and connects to the Yellowstone Bridge. The haul road surfacing will consist of approximately 135,000 cubic yards of pit run material. The following sections outlines recommendations regarding subgrade improvements, earthworks, and details regarding the geotechnical investigation.

Project Geology, Investigations, and Existing Site Conditions

The construction of the proposed haul road sections will require traversing native and undocumented fill (crusher fines or crusher reject material) subgrades. The haul road navigates the remnants of an old aggregate crusher pit contiguous to the Yellowstone River. Since extensive earthwork operations occurred at the crusher pit, substrates of undocumented fill may be found throughout the project area. Compacted bridge embankment is also within the project limits. Native geologic substrates at the site consist of terrace gravels overlying Claggett Shales. The native gravels exhibit A-1-a properties and is a high-quality subgrade material. Profiles illustrating the stratigraphy and approximate groundwater table of the haul road alignment's subsurface are found in Appendix A.

One area of known undocumented fill consisting of crusher fines may range from approximately Stations 132+00 to 138+50. The extent of the crusher fines was never extensively mapped but DOWL excavated two test pits (TP-2 and TP-5) on January 20, 2021 within the crusher fines area. The depth of the crusher fines extended to depths ranging from 6.0 To 8.0 feet below the existing ground surface. DOWL also excavated additional test pits (TP-1, TP-3, and TP-4) along the project profile and documented native soils and rock. Two geotechnical borings (9199000-BH-14 and 9199000-BH-15) were drilled in 2016 as part of Consultant Activity 106 of the Billings Bypass Project. We provide the test pit and boring logs in Appendix B which include soil and groundwater conditions. The crusher fines material ranges from sandy lean clay (A-4) to silty sand with gravel (visually classified). We present laboratory test results and the Lab Form No. 111 of samples collected in the test pits in Appendix C. Appendix C also contains laboratory test results for the reject stockpile and of drilled shaft cuttings that contain a mixture of Claggett shale alluvial gravel cuttings. In Appendix D, we present photographs of the site conditions and of the excavated test pits with their associated spoil piles.

Since it is not prudent to excavate an unknown quantity of crusher fines while the water level is rising in the existing gravel pit area, DOWL used Sigma/W, a finite element software, to estimate potential settlement induced by the proposed haul road embankment. DOWL estimates that one to two inches of settlement will occur within the embankment fill, crusher fines, and underlying native soil profiles. DOWL estimates that most of the settlement will have occurred when roadway construction commences in approximately two years.

Haul Road Earthwork and Drainage Considerations

The proposed haul road must be constructed per MDT's Standard Specifications for Road and Bridge Construction. Along the proposed haul road alignment, the exposed subgrade consists of native gravel, re-worked gravel and undocumented fill (crusher fines) overlying shale (clayey) bedrock. DOWL recommends placing a stabilization geotextile within the existing crusher fines area (about Stations 132+00 to 138+50). In areas where unstable soils exist, DOWL recommends removal of the unstable soil and the import of recommended subgrade material. To qualify the existence of unstable soil, the subgrade soils must be compacted and proof-rolled with heavy equipment (loaded haul truck, loaded front end loader, etc.). In unstable soil, soft or yielding areas will deform or rut under the back-and-forth movement of heavy equipment. Observations by an experienced inspector/technician must occur to direct the contractor the existence and extents of unsuitable subgrade.

- If stabilization of unsuitable subgrade areas is required, the following recommendations will apply:
    - A minimum over excavation depth of 2-feet should be specified and (A-1-a) subbase gravel utilized for select fill material.
    - A geotextile stabilization fabric per MDT standard Specifications Section 716.03 "Stabilization Geotextile" should be specified.
    - The Contractor must sequence the excavation utilizing excavators such that construction equipment does not run on the exposed subgrade.
    - The stabilization fabric should be placed directly approved subgrade and subbase end dumped and dozed onto the fabric.

Road embankment material must consist of a well-graded sand and gravel, free of organic and other deleterious material, meeting the AASHTO M 145 requirements for A-1-a or A-1-b group classifications, with 100% passing the 6-inch sieve and a maximum of 10% passing the No. 200 (0.075 mm) sieve. The material may consist of up to 50% millings, uniformly blended. Crusher fines and reject material may be used if they meet the requirements above. An alternative borrow material may be considered but must be approved by DOWL and MDT. The shale drilled shaft cuttings may not beneath the planned road.

All embankment fills and subgrade soils beneath pavement, concrete, or utilities should be moisture conditioned to plus or minus (+/-) 2 percent of optimum moisture content and compacted to at least 95 percent of the maximum density as determined by MT-210. If density tests indicate

compaction is not being achieved, the material should be scarified, moisture conditioned and/or dried to near optimum moisture content, and re-compacted and re-tested. In areas of standing water, the embankment must consist of A-1-a material until an adequate subgrade has been developed.

Fill Locations

Currently, fills are required along the entire alignment with the thickest centerline fills of approximately 12 to 14 feet ranging from Station 127+00.00 to 134+00.00. Based on the civil design, fill slopes are predominately at slope ratios of 4H:1V or 3H:1V. Shallower fills (6H:1) are proposed at the areas where there is less fill. The subgrade will consist of A-1-a to A-4 soils and A-7-6 soils if the Claggett shale is exposed. The A-4 soil should be compacted to a firm and nonyielding state before placement of embankment. If the subgrade yields during compaction efforts, the subgrade must be removed and replaced with special borrow material.

Appendices

Appendix A – Stratigraphy and Groundwater Profiles

Appendix B – Test Pit and Boring Logs

Appendix C – Laboratory Testing Results and Lab Form No. 111

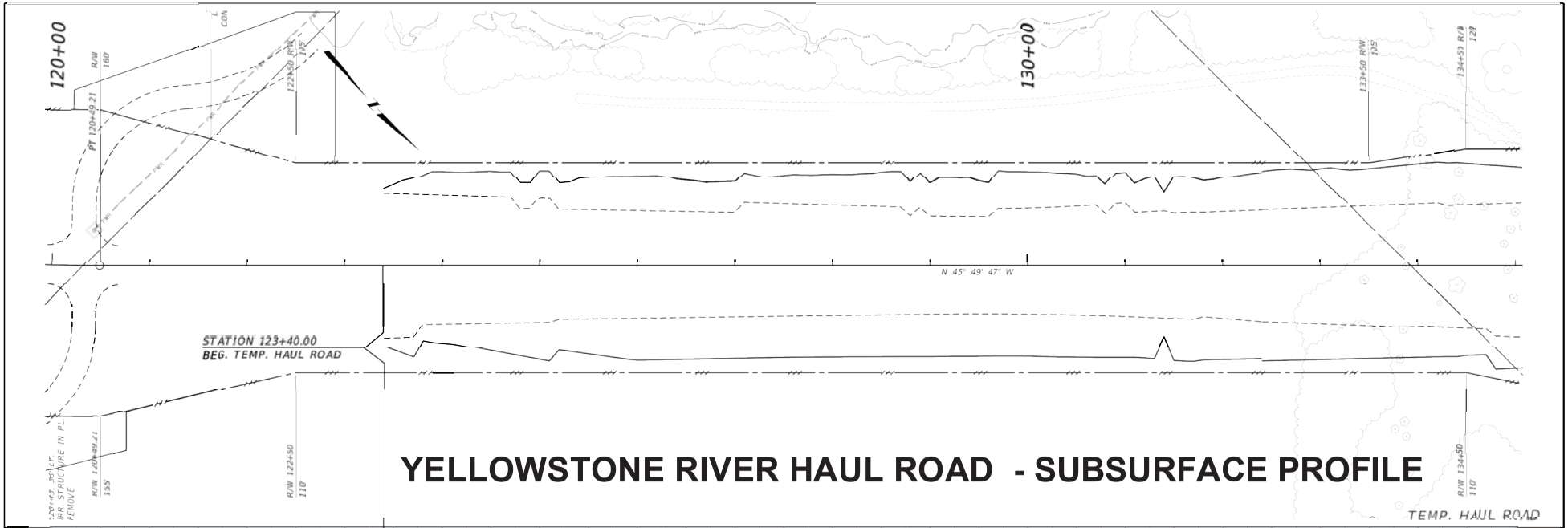
Appendix D – Photographic Log

Billings Bypass – Haul Road - 4199005
Billings, Montana

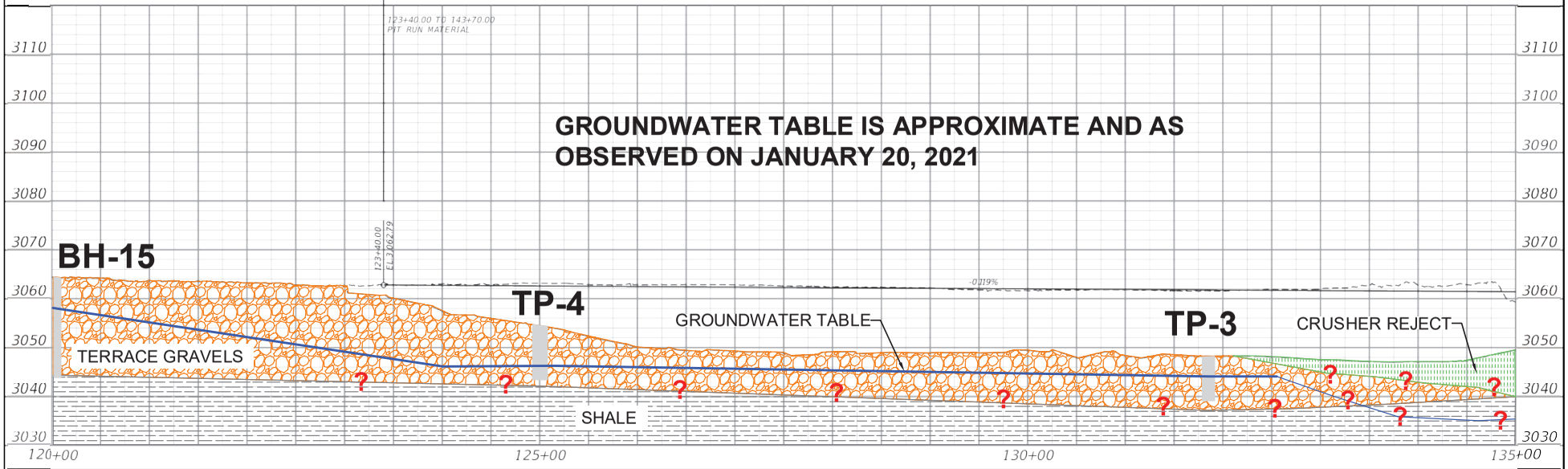
Appendix A:

Stratigraphy and Groundwater Profiles

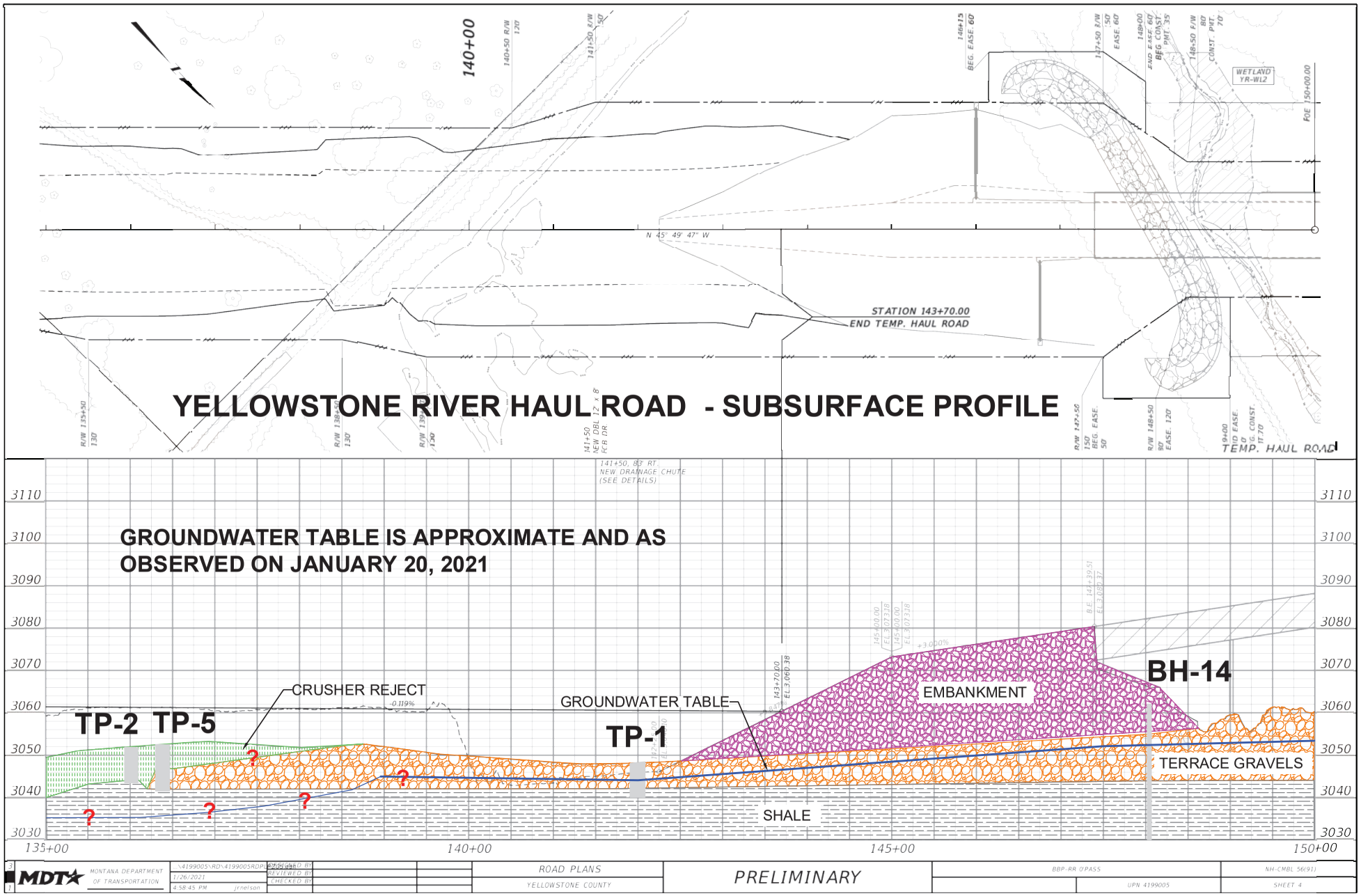
DOWL



YELLOWSTONE RIVER HAUL ROAD - SUBSURFACE PROFILE



MDT MONTANA DEPARTMENT OF TRANSPORTATION	\4199005\RD\4199005RDM.dgn	DESIGNED BY	ROAD PLANS	PRELIMINARY	BBP-RR 0'PASS	NH-CMBL 56(91)
	1/26/2021	REVIEWED BY	YELLOWSTONE COUNTY		UPN 4199005	SHEET 3
	4:58:44 PM jrnelson	CHECKED BY				



DOWL

MDT MONTANA DEPARTMENT OF TRANSPORTATION

ROAD PLANS
YELLOWSTONE COUNTY

PRELIMINARY

BBP-RR 0'PASS
UPN 4199005

NH-CMBL 56(91)
SHEET 4

Billings Bypass – Haul Road - 4199005
Billings, Montana

Appendix B:

Test Pit and Boring Logs

MDT Boring Log Descriptive Terminology

Key to Soil Symbols and Terms

01/18/12

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Geotechnical Section

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	Well-graded gravels, gravel sand mixtures, little or no fines.
				GP	Poorly graded gravels, gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	Silty gravels, gravel-sand-silt mixtures.
				GC	Clayey gravels, gravel-sand-clay mixtures.
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	Well-graded sands, gravelly sands, little or no fines.
				SP	Poorly graded sands, gravelly sands, little or no fines.
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	Silty sands, sand-silt mixtures.
				SC	Clayey sands, sand-clay mixures.
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)			ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
				OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50)			MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
				CH	Inorganic clays of high plasticity, fat clays.
				OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS				PT	Peat and other highly organic soils.

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Order of Descriptors

- Group Name
- Consistency or Relative Density
- Moisture Condition
- Color
- Particle size descriptor(s) (coarse grained soils only)
- Angularity of coarse grained soils
- Other relevant notes

Criteria For Descriptors

Consistency of Fine Grained Soils

Consistency	N-Value (uncorrected)
Very Soft	< 2
Soft	2 - 4
Medium Stiff	5 - 8
Stiff	9 - 15
Very Stiff	16 - 30
Hard	> 30

Apparent Density of Coarse Grained Soils

Relative Density	N-Value (uncorrected)
Very Loose	< 4
Loose	4 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

Moisture Condition

Dry	-Absence of moisture, dusty, dry to the touch.
Moist	-Damp, but no visible water.
Wet	-Visible free water.

Definition of Particle Size Ranges

Soil Component	Size Range
Boulder	> 12 in (300 mm)
Cobble	3 in (75 mm) - 12 in (300 mm)
Gravel	No. 4 Sieve (4.75 mm) to 3 in (75 mm)
Sand	No. 200 (0.075 mm) to No. 4 Sieves (4.75 mm)
Silt	< No. 200 Sieve (0.075 mm)*
Clay	< No. 200 Sieve (0.075 mm)*

*Atterberg limits and chart below to differentiate between silt and clay.

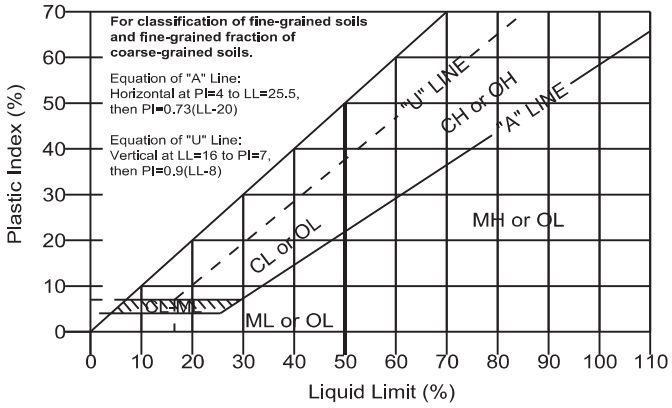
Notes

See Soil Boring Information Special Provision.

SPT (Standard Penetration Test-ASTM D1586):
The number of blows of a 140 lb (63.6 kg) hammer falling 2.5 ft (750 mm) used to drive a 2 in (50 mm) O.D. Split Spoon sampler for a total of 1.5 ft (0.45 m) of penetration.
Written as follows:
first 0.5 ft (0.15 m) - second 0.5 ft (0.15 m) - third 0.5 ft (0.15 m) (ex: 1-3-9)
Note: if the number of blows exceeds 50 before 0.5 ft (0.15 m) of penetration is achieved, the actual penetration rounded to the nearest 0.1 ft (0.03 m) follows the number of blows in parentheses (ex: 12-24-50 (0.09 m), 34-50 (0.4 ft), or 100 (0.3 ft)).WR denotes a zero blow count with the weight of the rods only.
WH denotes a zero blow count with the weight of the rods plus the weight of the hammer.

MC=Moisture Content, LL=Liquid limit, PL=Plastic Limit
-200%=percent soil passing 200 sieve, DD=Dry Density

Soil Classifications are Based on the Unified Soil Classification System, ASTM D2487 and D2488. Also included are the AASHTO group classifications (M145). Descriptions are based on visual observation, except where they have been modified to reflect results of laboratory tests as deemed appropriate.



Angularity of Coarse-Grained Particles

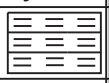
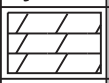
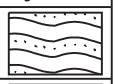
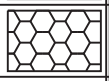
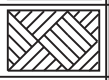
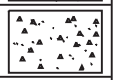
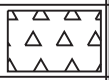
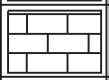
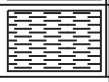
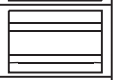
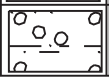
Angular	-Particles have sharp edges and relative plane sides with unpolished surfaces.
Subangular	-Particles are similar to angular description, but have rounded edges.
Subrounded	-Particles have nearly plane sides, but have no edges.
Rounded	-Particles have smoothly curved sides and well-rounded corners and edges.

Example soil description: Sandy FAT CLAY (CH), soft, wet, brown. (A-7)

MDT Boring Log Descriptive Terminology
Key to Rock Symbols and Terms

01/18/12

MONTANA MDT DEPARTMENT OF TRANSPORTATION
Geotechnical Section

Rock Type	Symbol	Rock Type	Symbol	Rock Type	Symbol
Argillite		Dolomite		Quartzite	
Basalt		Gneiss		Rhyolite	
Bedrock (other)		Granitic		Sandstone	
Breccia		Limestone		Schist	
Claystone		Siltstone		Shale	
		Conglomerate			

Order of Descriptors

- Rock Type
- Color
- Grain size (if applicable)
- Stratification/Foliation (as applicable)
- Field Hardness
- Other relevant notes

Criteria For Descriptors
Grain Size

Description	Characteristic
Coarse Grained	-Individual grains can be easily distinguished by eye
Fine Grained	-Individual grains can be distinguished with difficulty

Stratum Thickness

Thickly Bedded	3-10 ft (1-3 m)
Medium Bedded	1-3 ft (300 mm - 1 m)
Thinly Bedded	2-12 in (50-300 mm)
Very Thinly Bedded	< 2 in (50 mm)

Rock Field Hardness

Very Soft	-Can be carved with knife. Can be excavated readily with point of rock hammer. Can be scratched readily by fingernail.
Soft	-Can be grooved or gouged readily by knife or point of rock hammer. Can be excavated in fragments from chips to several inches in size by moderate blows of the point of a rock hammer.
Medium	-Can be grooved or gouged 0.05 in (2 mm) deep by firm pressure of knife or rock hammer point. Can be excavated in small chips to pieces about 1 in (25 mm) maximum size by hard blows of the point of a rock hammer.
Moderately hard	-Can be scratched with knife or pick. Gouges or grooves to 0.25 in (6 mm) can be excavated by hard blow of rock hammer. Hand specimen can be detached by moderate blows.
Hard	-Can be scratched with knife or pick only with difficulty. Hard hammer blows required to detach hand specimen.
Very Hard	-Cannot be scratched with knife or sharp rock hammer point. Breaking of hand specimens requires several hard blows of a rock hammer.

Notes:

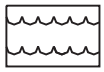
UCS = Unconfined Compressive Strength obtained from laboratory testing at the given depth.

See Soil Boring Information Special Provision.

Miscellaneous Soil/Rock Symbols and Terms

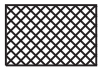

Concrete

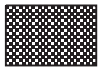

Asphalt


Water


Boulders and Cobbles


Coal


Fill


Millings


Topsoil

-Soil and Rock descriptions are based on visual observation, except where they have been modified to reflect results of laboratory tests as deemed appropriate.

Explanation of Text Fields in Boring Logs:

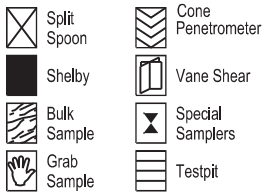
Material Description: Lithologic Description of soil or rock encountered.

Remarks: Comments on drilling, including method, bit type, and problems encountered.
Unless stated on logs as being surveyed by district survey, all locations are considered approximate.

General Notes

- Descriptions on these boring logs apply only at the specific boring, and at the time the borings were made. These logs are not warranted to be representative of subsurface conditions at other locations or times.
- Water level observations apply only at the specific boring, and at the time the borings were made. Due to the variability of groundwater measurements given the type of drilling used, and the stratification of the soil in the boring, these logs are not warranted to be representative of groundwater conditions at other locations or times.
- Other terms may be used as descriptors, as defined by the profession.

Operation Types:


Sample Types:


Example Rock Log

SANDSTONE, gray, fine grained, thickly bedded, hard field hardness.

Project No.: 4024.20946.03	LOG OF TEST PIT TP-1	Sheet 1 of 1

CLIENT	PROJECT
Montana Department of Transportation	BBP-Yellowstone River CE Services
TEST PIT LOCATION	**SITE**
Sta. 142+00	Billings, MT

DEPTH (FT.)	MATERIAL DESCRIPTION	GRAPHIC LOG	ELEVATION (FT.)	SAMPLES: BULK/GRAB	SAMPLES: POCKET PENE-TROMETER, TSF	SAMPLES: M.C. (PL 10 20 30 40 LL)	ADDITIONAL DATA/ REMARKS
0	Poorly Graded GRAVEL with silt and sand, GP-GM; moist, brown, fine to coarse grained sand, round to sub-rounded, trace cobbles AASHTO=A-1-a						Latitude/Longitude; 45.8418,-108.4115
2	Grades less sand at 2.0 feet						Lab #34883; USCS=GP-GM Fines=7.1% Sand=24% LL=NV PI=NP Natural Moisture=7%
4	Groundwater encountered at 4.0 feet during excavation						
6	6.0 -6 SHALE; hard, moist, dark brown						
8	-8.4 -8.4 Test pit terminated at 8.4 feet Groundwater observed at 4.0 feet during excavation						
10							
12							
14							

DOWL
222 N. 32nd Street
Billings, Montana 59101
Telephone: (406) 656-6399
www.dowl.com

STARTED	1/20/21	FINISHED	1/20/21
CONTRACTOR	KLE	EXCAVATOR	John Deere
OPERATOR		MODEL	290 G
LOGGED BY	D. Russell	APPROVED BY	D. Barrick

Project No.: 4024.20946.03

LOG OF TEST PIT TP-2

CLIENT: Montana Department of Transportation

PROJECT: BBP-Yellowstone River CE Services

TEST PIT LOCATION: Sta. 136+00

SITE: Billings, MT

DEPTH (FT.)	MATERIAL DESCRIPTION	GRAPHIC LOG	ELEVATION (FT.)	SAMPLES: BULK/GRAB	SAMPLES: POCKET PENE-TROMETER, TSF	SAMPLES: M.C. (PL 10 20 30 40 LL)	ADDITIONAL DATA/ REMARKS
0	Undocumented FILL, Sandy Lean CLAY, CL; moist, brown, fine to medium grained, (Crusher Reject) AASHTO=A-4						Latitude/Longitude; 44.8405,-108.4098
2							12" Density Test; 105.1pcf @ 7.5% moisture
4							Lab #34884; USCS=CL Fines=59.4% Sand=30% LL=30 PI=10 Natural Moisture=17%
6	Grades lenses of gravel and cobbles at 7.0 feet						
8	8.0 -8 SHALE; hard, moist, black to dark brown						
	8.5 -8.5 Test pit terminated at 8.5 feet						
10	No groundwater observed						
12							
14							

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STARTED	1/20/2021	FINISHED	1/20/2021
CONTRACTOR	KLE	EXCAVATOR	John Deere
OPERATOR		MODEL	290 G
LOGGED BY	D. Russell	APPROVED BY	D. Barrick

Project No.: 4024.20946.03

LOG OF TEST PIT TP-3

Sheet 1 of 1

CLIENT: Montana Department of Transportation

PROJECT: BBP-Yellowstone River CE Services

TEST PIT LOCATION: Sta. 131+80

SITE: Billings, MT

DEPTH (FT.)	MATERIAL DESCRIPTION	GRAPHIC LOG	ELEVATION (FT.)	SAMPLES: BULK/GRAB	SAMPLES: POCKET PENE-TROMETER, TSF	SAMPLES: M.C. (PL 10 20 30 40 LL)	ADDITIONAL DATA/ REMARKS
0	Poorly Graded GRAVEL with sand and cobbles; moist, brown to gray, fine to coarse grained sand, rounded to sub-rounded						Latitude/Longitude; 45.8398,-108.4086
4	Groundwater observed at 4.0 feet during excavation						
6	Grades sub-angular cobbles at 6.0 feet Cobbles up to 14 inches in diameter						
9.0	Test pit terminated at 9.0 feet		-9				
10	Groundwater observed at 4.0 feet during excavation						

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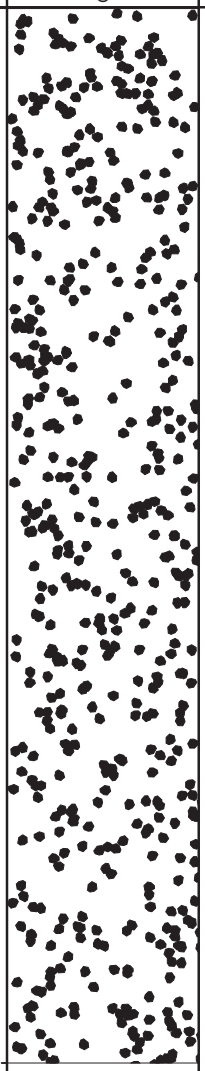
STARTED	1/20/21	FINISHED	1/20/21
CONTRACTOR	KLE	EXCAVATOR	John Deere
OPERATOR		MODEL	290 G
LOGGED BY	D. Russell	APPROVED BY	

Project No.: 4024.20946.03	LOG OF TEST PIT TP-4	Sheet 1 of 1

CLIENT	PROJECT
Montana Department of Transportation	BBP-Yellowstone River CE Services
TEST PIT LOCATION	**SITE**
Sta. 125+00	Billings, MT

DEPTH (FT.)	MATERIAL DESCRIPTION	GRAPHIC LOG	ELEVATION (FT.)	SAMPLES: BULK/GRAB	SAMPLES: POCKET PENE-TROMETER, TSF	SAMPLES: M.C. (PL 10 20 30 40 LL)	ADDITIONAL DATA/ REMARKS
0	Poorly Graded GRAVEL with sand, GP; loose moist, brown, fine to coarse grained sand, round to sub-rounded, AASHTO=A-1-a						Latitude/Longitude; 45.8386,-108.4067
2							Lab #34885 USCS=GP Fines=3.6% Sand=19% LL=NV PI=NP Natural Moisture=5%
4							
6							
8 ▽	Groundwater observed at 8.0 feet during excavation						
10							
11.0	Test pit terminated at 11.0 feet						
12	Groundwater observed at 8.0 feet during excavation						
14							

DOWL	DOWL 222 N. 32nd Street Billings, Montana 59101 Telephone: (406) 656-6399 www.dowl.com	STARTED 1/20/21	FINISHED 1/20/21
		CONTRACTOR KLE	EXCAVATOR John Deere
		OPERATOR	MODEL 290 G
		LOGGED BY D. Russell	APPROVED BY

Project No.: 4024.20946.03

LOG OF TEST PIT TP-5

Sheet 1 of 1

CLIENT: Montana Department of Transportation

PROJECT: BBP-Yellowstone River CE Services

TEST PIT LOCATION:

SITE: Billings, MT

DEPTH (FT.)	MATERIAL DESCRIPTION	GRAPHIC LOG	ELEVATION (FT.)	SAMPLES: BULK/GRAB	SAMPLES: POCKET PENETROMETER, TSF	SAMPLES: M.C. (PL 10 20 30 40 LL)	ADDITIONAL DATA/ REMARKS
0	Undocumented FILL, Silty SAND with gravel; moist, brown, fine to coarse grained sand (Crusher Reject)						
2							Density test; 101.9pcf @ 10.3% moisture
4							Density test; 108.7pcf @ 7.55% moisture
6	6.0 -6 Poorly Graded GRAVEL with cobbles and boulders; moist to very moist, brown, fine to coarse grained sand, sub-angular to rounded						
8 ▽							
10	10.5 -10.5 SHALE; hard, moist, black to dark brown						
	11.0 -11 Test pit terminated at 11.0 feet						
12							
14							

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Billings, Montana 59101
Telephone: (406) 656-6399
www.dowl.com

STARTED	1/20/21	FINISHED	1/20/21
CONTRACTOR	KLE	EXCAVATOR	John Deere
OPERATOR		MODEL	290 G
LOGGED BY	D. Russell	APPROVED BY	

LOG OF BORING

Boring 4199000-BH-14

Project: NCDP 56(55) Billings Bypass		**Rig:** CME 550 **Hammer:** Auto	**Boring Location Coordinates** N: 582730.159 ft E: 2245371.701 ft	**Station:** 148 + 09 **Offset:** 4 ft R
Project Number: 4024.20946.01	**UPN:** 4199000	**Boring Diameter:** 6.25"	**System:** MT S.P. (E) **Datum:** NAD83	**Ground Elevation:** 3062.042 ft
Date Started: 6/2/16	**Date Finished:** 6/3/16	**Drilling Fluid:** None	**Location Source:** Surveyed	**Elevation Source:** Surveyed
Driller: IDS **Logger:** A. Zwemke	**Notes:**			**PLS TRS-QQ:** 1N 27E 7 - DC **Abandonment:** Cuttings

Depth (ft) / Elev. (ft)	Operation	Sample Type	Recovery (%)	RQD (%)	Blow Count	Lithology	Material Description	Depth (ft) / Elev. (ft)	MC (%)	LL	PL	-200 (%)	Qu (psi)	DD (pcf)	Remarks and Other Tests
			22.2		10 - 12 - 12		FILL, Poorly-Graded GRAVEL with silt and sand (GP-GM), medium dense, dry to moist, brown, fine to coarse grained, subrounded to subangular, [A-1].	1.0 *3061.0*	5 10						
			55.5		5 - 3 - 5				8	25	15	48			
5 *3057.0*			55.5		3 - 8 - 22		Clayey SAND with gravel (SC), loose to medium dense, dry to moist, brown, [A-4].		10						
			66.6		28 - 44 - 32		Poorly-Graded GRAVEL with silt and sand (GP-GM), dense to very dense, moist to wet, brown, fine to coarse grained, subrounded to subangular, [A-1].	7.0 *3055.0*	2						
10 *3052.0*			33.3		4 - 14 - 33										
15 *3047.0*			55.5		20 - 36 - 50										
20 *3042.0*							SHALE, gray, fine grained, very thinly bedded, soft to medium field hardness.	18.0 *3044.0*							
			100	100					7				299	136	
25 *3037.0*			100	100											
30 *3032.0*			6.6	11											
35 *3027.0*			100	94											
40 *3022.0*			100	100											
45 *3017.0*															

Water Level Observations

During Drilling: **10.0 ft** *(3052.0 ft)*

After Drilling:

After Drilling:

Remarks:

LOG OF BORING

Boring 4199000-BH-14

Project: NCDP 56(55) Billings Bypass		**Rig:** CME 550 **Hammer:** Auto	**Boring Location** N: 582730.159 ft **Coordinates** E: 2245371.701 ft	**Station:** 148 + 09 **Offset:** 4 ft R
Project Number: 4024.20946.01	**UPN:** 4199000	**Boring Diameter:** 6.25"	**System:** MT S.P. (E) **Datum:** NAD83	**Ground Elevation:** 3062.042 ft
Date Started: 6/2/16	**Date Finished:** 6/3/16	**Drilling Fluid:** None	**Location Source:** Surveyed	**Elevation Source:** Surveyed
Driller: IDS **Logger:** A. Zwemke	**Notes:**			**PLS TRS-QQ:** 1N 27E 7 - DC **Abandonment:** Cuttings

Depth (ft) Elev. (ft)	Operation	Sample Type	Recovery (%)	RQD (%)	Blow Count	Lithology	Material Description	Depth (ft) Elev. (ft)	MC (%)	LL	PL	-200 (%)	Qu (psi)	DD (pcf)	Remarks and Other Tests
50 3012.0			96	96			Boring Depth: 50.0 ft, *Elevation: 3012.0 ft*	50.0 3012.0	8				322	147	

Water Level Observations

During Drilling: **10.0 ft** ***(3052.0 ft)***

After Drilling:

After Drilling:

Remarks:

LOG OF BORING

Boring 4199000-BH-15

Project: NCDP 56(55) Billings Bypass		**Rig:** CME 550 **Hammer:** Auto	**Boring Location** N: 580727.443 ft **Coordinates** E: 2247422.328 ft	**Station:** 119 + 42 **Offset:** 0 ft L
Project Number: 4024.20946.01	**UPN:** 4199000	**Boring Diameter:** 6.25"	**System:** MT S.P. (E) **Datum:** NAD83	**Ground Elevation:** 3064.331 ft
Date Started: 6/2/16	**Date Finished:** 6/2/16	**Drilling Fluid:** None	**Location Source:** Surveyed	**Elevation Source:** Surveyed
Driller: IDS **Logger:** A. Zwemke	**Notes:**			**PLS TRS-QQ:** 1N 27E 18 - AD **Abandonment:** Cuttings

Depth (ft) / Elev. (ft)	Operation	Sample Type	Recovery (%)	RQD (%)	Blow Count	Lithology	Material Description	Depth (ft) / Elev. (ft)	MC (%)	LL	PL	-200 (%)	Qu (psi)	DD (pcf)	Remarks and Other Tests
			44.4		5 - 7 - 10		TOPSOIL, Sandy Lean CLAY (OH), moist, brown, fine grained, [A-6].	2.0 *3062.3*	10						
			44.4		6 - 12 - 50		Clayey GRAVEL with sand (GC), medium dense to very dense, moist to wet, brown, fine to coarse grained, subrounded to subangular, [A-2].		2 5	28	16	27			
5 *3059.3*			33.3		20 - 23 - 25				2						
			55.5		8 - 10 - 10										
10 *3054.3*			33.3		6 - 15 - 14										
15 *3049.3*			55.5		8 - 11 - 23										
20 *3044.3*			66.6		50		SHALE, gray, fine grained, very thinly bedded, soft field hardness.	20.0 *3044.3* 20.5 *3043.8*							

Boring Depth: 20.5 ft, *Elevation: 3043.8 ft*

Water Level Observations		Remarks:
▽ After Drilling:	▽ During Drilling: **7.5 ft** ***(3056.8 ft)***	
	▼ After Drilling:	

Billings Bypass – Haul Road - 4199005
Billings, Montana

Appendix C:

Laboratory Testing Results and Lab Form No. 111

222 N. 32ND STREET
SUITE 700
BILLINGS, MT 59101

LAB FORM NO. 111

MONTANA DEPARTMENT OF HIGHWAYS

PRECONSTRUCTION SOIL SURVEY DATA, BILLINGS BYPASS - Yellowstone River Haul Road

AND SPECIAL RECOMMENDATIONS RELATIVE TO SUBGRADE AND ROAD SURFACE DESIGN

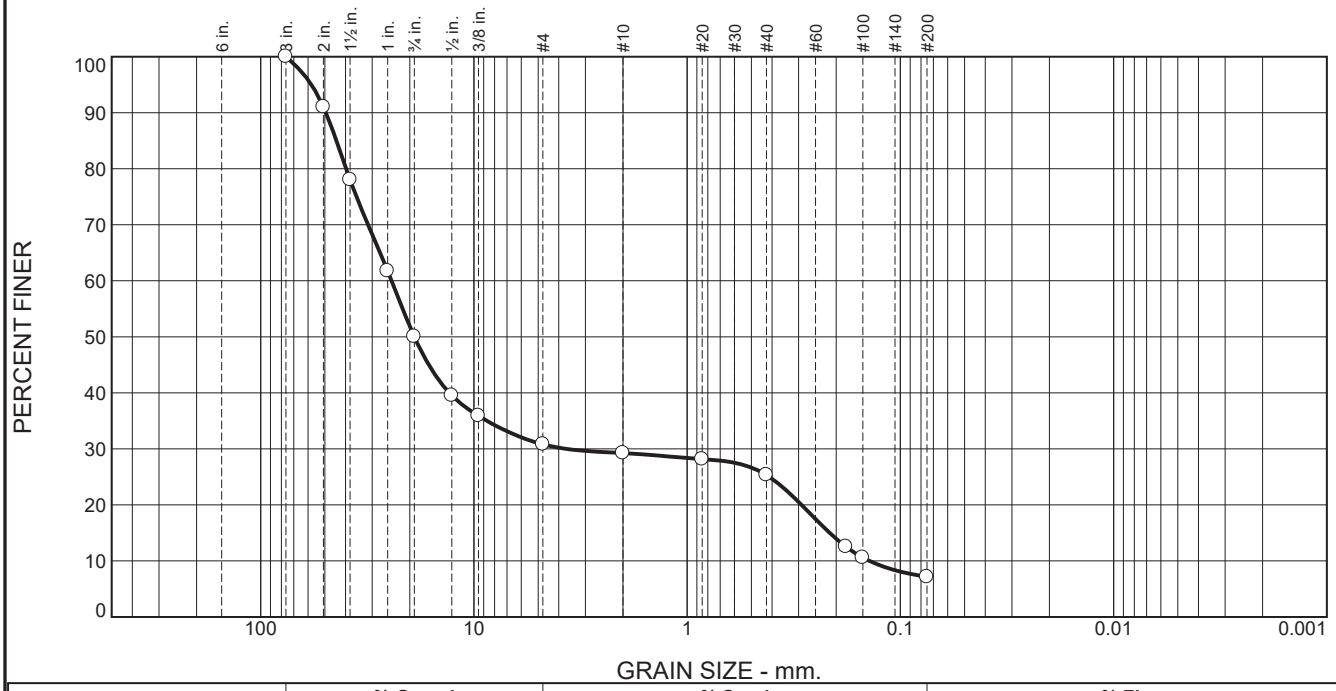
Project No.: 2024.20946.03 Designation: 4199003 Length: ± County: Yellowstone Date: January 2021

Submitted by: DOWL Title: Geotechnical Consultant Dennis A. Russell, PE, Geotechnical Engineer Douglas Enderson PE, Project Manager

BOREHOLE NUMBER	LAB NUMBER	APPROXIMATE LOCATION	DEPTH RANGE	REPRESENTING STATIONING		SOIL CLASS (MT 214)	CLASSIFICATION SYMBOL	LIQUID LIMIT - %	PLASTICITY INDEX - %	GRAVEL NO. 4 TO 3 IN.	SAND NO. 200 TO NO. 4	200 MESH - SMALLER THAN NO. 200	DRY UNIT WEIGHT-pcf	CONSOLIDATION - Cc	UNCONFINED, qu - KSF	MAXIMUM DRY UNIT WEIGHT(MT210)-pcf	NATURAL MOISTURE - %	OPTIMUM MOISTURE CONTENT - %	CALIFORNIA BEARING RATIO	DIRECT SHEAR FRICTION ANGLE	TRIAXIAL EFFECTIVE FRICTION ANGLE	CHLORIDE - mg/kg	RESISTIVITY (Ohm-Cm)	pH	WATER SOLUBLE SO_4 - mg/kg
				STA.	OFFSET (ft)																			
TP-1	34883		2.0 to 4.0	142+00		A-1-a	GP-GM	NV	NP	69	24	7.1					7							
TP-2	34884		4.0 to 6.0	136+00		A-4(4)	CL	30	10	11	30	59.4				114.9	17	15						
TP-4	34885		2.0 to 4.0	125+00		A-1-a	GP	NV	NP	61	19	3.6					5							
NA	34886		Reject Stockpile	NA		A-1-b	SM	NV	NP	36	50	13.7												
NA	34887		Shale Cuttings	NA		A-7-6(14)	CL	48	33	39	6	54.4												

Remarks:

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	50.0	19.2	1.6	3.9	18.2	7.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100.0		
2	91.0		
1.5	78.0		
1	61.8		
.75	50.0		
.5	39.5		
.375	35.9		
#4	30.8		
#10	29.2		
#20	28.2		
#40	25.3		
#80	12.5		
#100	10.6		
#200	7.1		

* (no specification provided)

Material Description

Poorly Graded GRAVEL with silt and sand
Natural Moisture 7.0%

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= GP-GM **AASHTO (M 145)=** A-1-a

Coefficients

D_{90}= 49.4784 D_{85}= 44.1639 D_{60}= 24.3392
D_{50}= 19.0403 D_{30}= 3.6960 D_{15}= 0.2144
D_{10}= 0.1399 C_u= 174.03 C_c= 4.01

Remarks

Sampled by DOWL
F.M.=5.89

Date Received: 1/20/21 **Date Tested:** 1/26/20
Tested By: CDC
Checked By: DAR
Title: Geotechnical Engineer

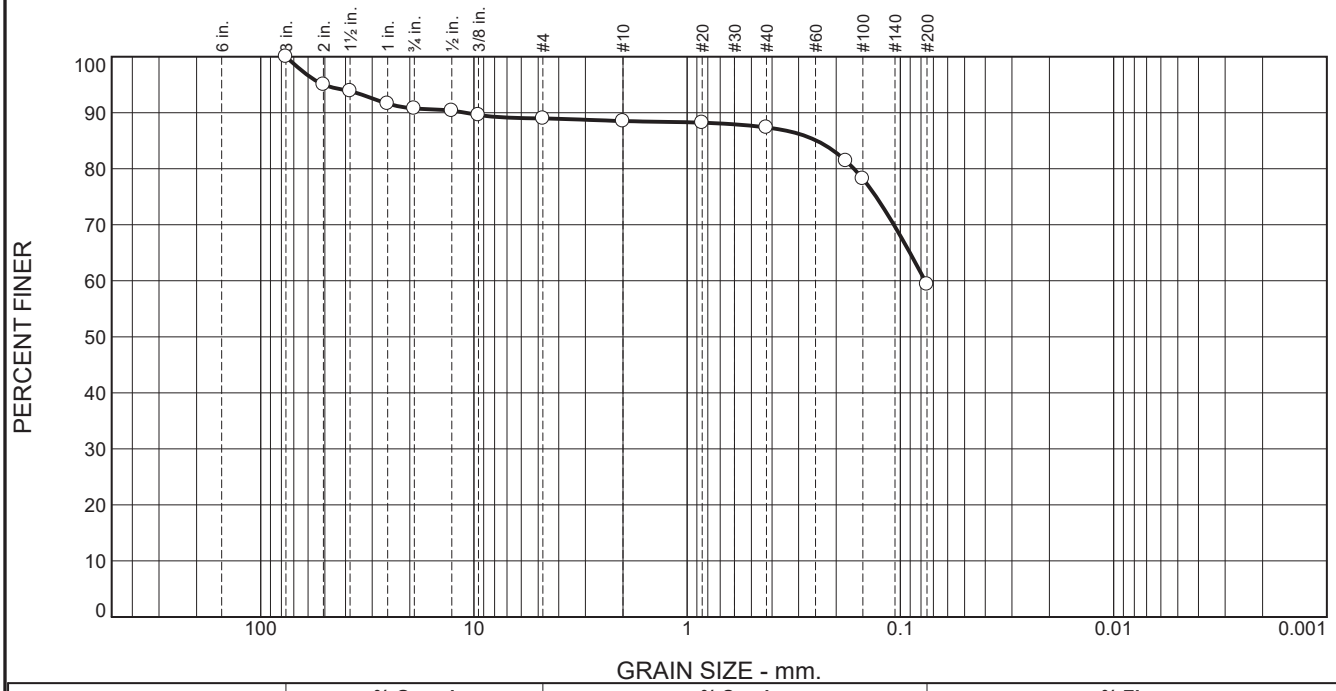
Location: TP-1
Sample Number: 34883 **Depth:** 2.0-4.0 **Date Sampled:** 1/20/21

DOWL

Client: MDT
Project: BBP-Yellowstone River CE Services

Project No: 4024.20946.03 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.2	1.8	0.5	1.1	28.0	59.4	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100.0		
2	95.0		
1.5	93.9		
1	91.6		
.75	90.8		
.5	90.4		
.375	89.6		
#4	89.0		
#10	88.5		
#20	88.2		
#40	87.4		
#80	81.4		
#100	78.2		
#200	59.4		

* (no specification provided)

Material Description

Sandy Lean CLAY
Fill
Natural Moisture 17.2%

Atterberg Limits (ASTM D 4318)

PL= 20 **LL=** 30 **PI=** 10

Classification

USCS (D 2487)= CL **AASHTO (M 145)=** A-4(4)

Coefficients

D_{90}= 11.0214 D_{85}= 0.2470 D_{60}= 0.0765
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Sampled by DOWL
F.M.=1.08

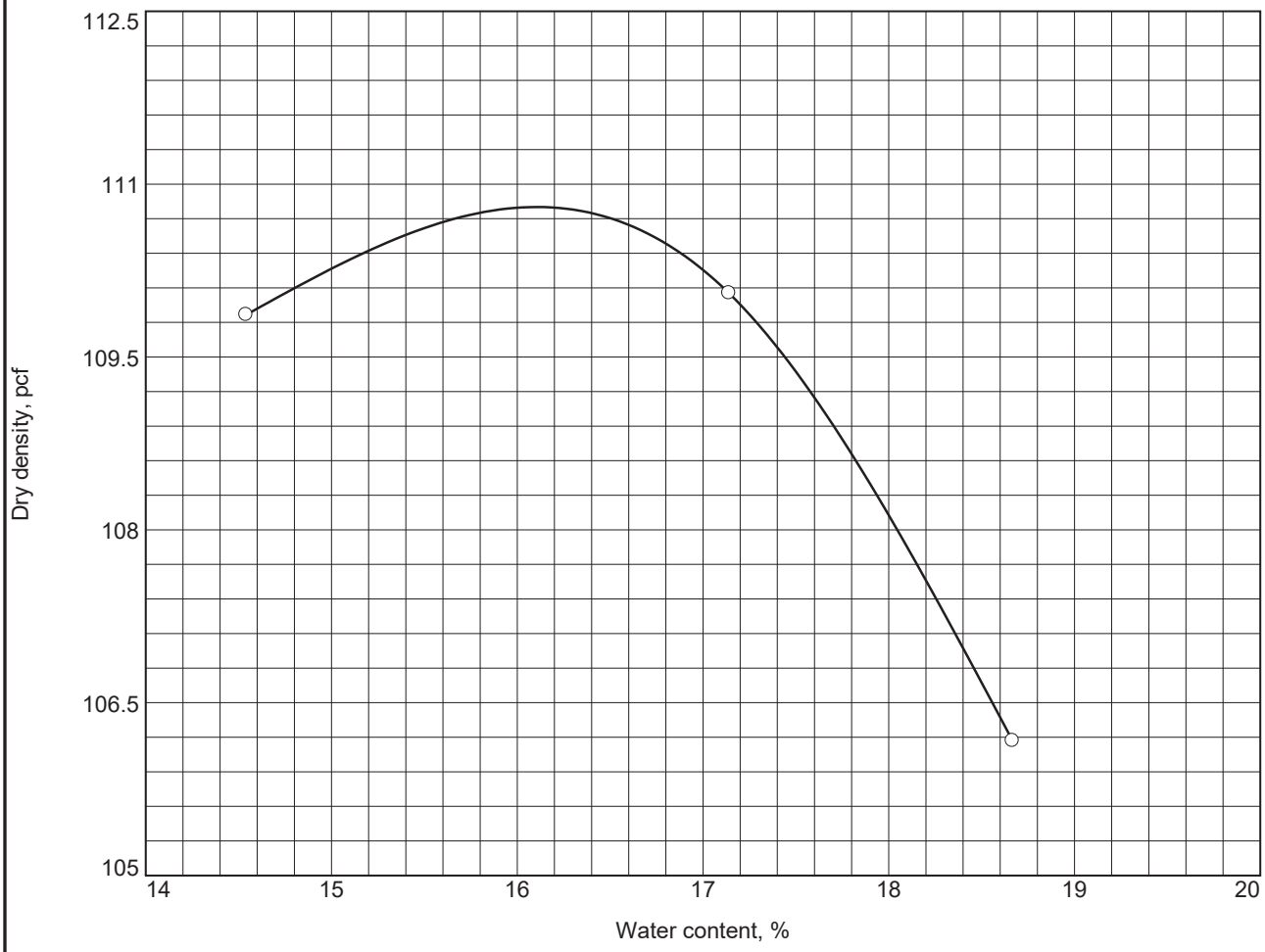
Date Received: 1/23/21 **Date Tested:** 1/26/21
Tested By: CDC
Checked By: DAR
Title: Geotechnical Engineer

Location: TP-2
Sample Number: 34884 **Depth:** 4.0-6.0 **Date Sampled:** 1/20/21

DOWL

Client: MDT
Project: BBP-Yellowstone River CE Services

Project No: 4024.20946.03 **Figure**



Test specification: MT 210 Method A Standard
AASHTO T 224-01 Oversize Correction Applied to Final Results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
4.0-6.0	CL	A-4(4)			30	10	11.0	59.4

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 114.9 pcf	110.8 pcf	Sandy Lean CLAY Fill Natural Moisture 17.2%
Optimum moisture = 14.5 %	16.1 %	

Project No. 4024.20946.03 **Client:** MDT
Project: BBP-Yellowstone River CE Services
Date: 1/26/21
○ **Location:** TP-2 **Sample Number:** 34884

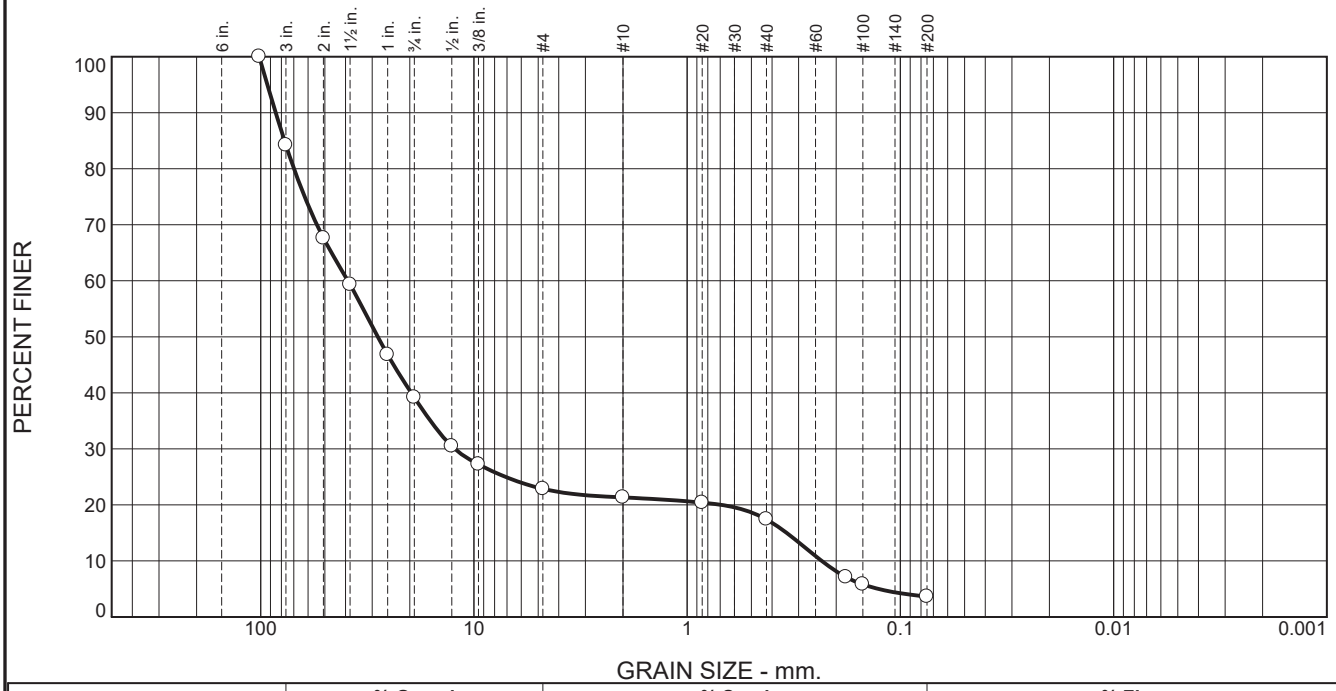
Remarks:
Sampled by DOWL

DOWL

Figure

Tested By: CDC **Checked By:** DAR

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
15.8	45.0	16.3	1.6	3.9	13.8	3.6	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0		
3	84.2		
2	67.6		
1.5	59.3		
1	46.8		
.75	39.2		
.5	30.5		
.375	27.2		
#4	22.9		
#10	21.3		
#20	20.4		
#40	17.4		
#80	7.1		
#100	5.8		
#200	3.6		

* (no specification provided)

Material Description

Poorly Graded GRAVEL with sand
Natural Moisture 5.0%

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= GP **AASHTO (M 145)=** A-1-a

Coefficients

D_{90}= 85.0480 D_{85}= 77.3749 D_{60}= 39.0135
D_{50}= 28.2479 D_{30}= 12.3034 D_{15}= 0.3415
D_{10}= 0.2338 C_u= 166.89 C_c= 16.60

Remarks

Sampled by DOWL
F.M.=6.86

Date Received: 1/21/20 **Date Tested:** 1/26/21
Tested By: CDC
Checked By: DAR
Title: Geotechnical Engineer

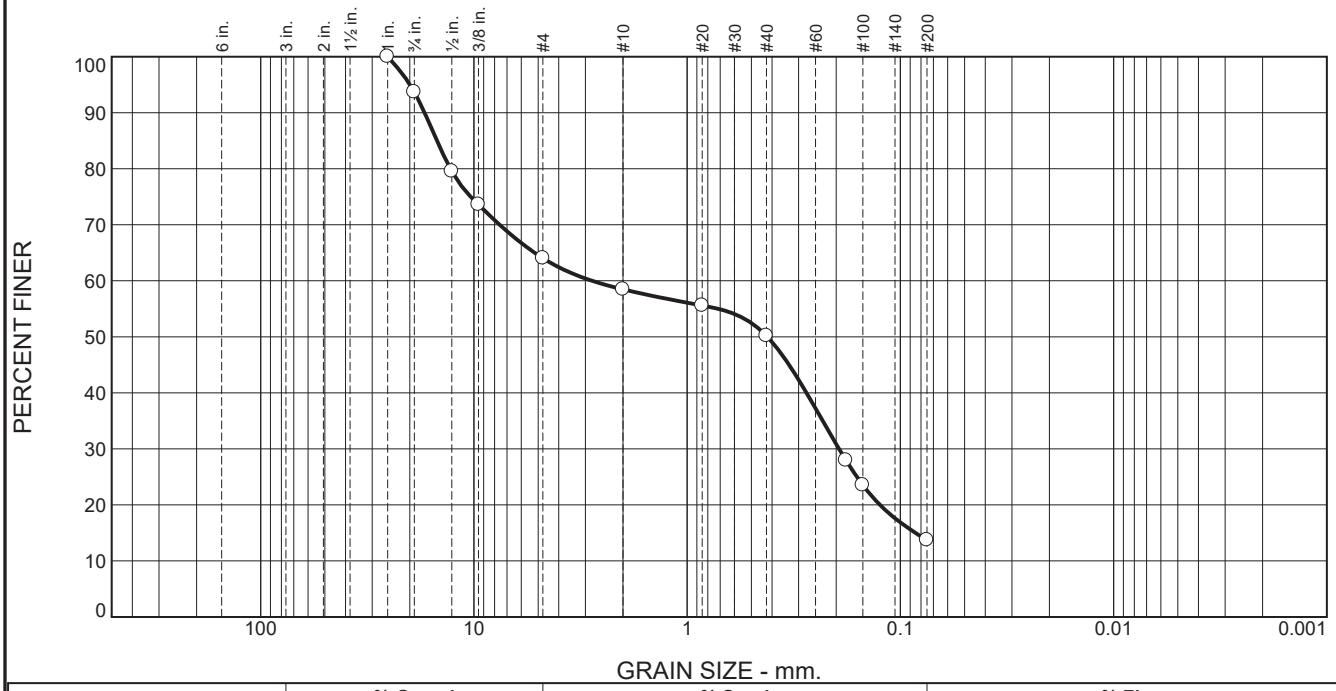
Location: TP-4
Sample Number: 34885 **Depth:** 2.0-4.0 **Date Sampled:** 1/20/21

DOWL

Client: MDT
Project: BBP-Yellowstone River CE Services

Project No: 4024.20946.03 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.3	29.7	5.5	8.3	36.5	13.7	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1	100.0		
.75	93.7		
.5	79.6		
.375	73.6		
#4	64.0		
#10	58.5		
#20	55.6		
#40	50.2		
#80	28.0		
#100	23.5		
#200	13.7		

* (no specification provided)

Material Description

Silty SAND with gravel

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-1-b

Coefficients

D_{90}= 17.0472 D_{85}= 14.9076 D_{60}= 2.7937
D_{50}= 0.4205 D_{30}= 0.1940 D_{15}= 0.0849
D_{10}= C_u= C_c=

Remarks

Sampled by DOWL
F.M.=3.33

Date Received: 1/21/21 **Date Tested:** 1/26/21

Tested By: CDC

Checked By: DAR

Title: Geotechnical Engineer

Location: Reject Stockpile
Sample Number: 34886

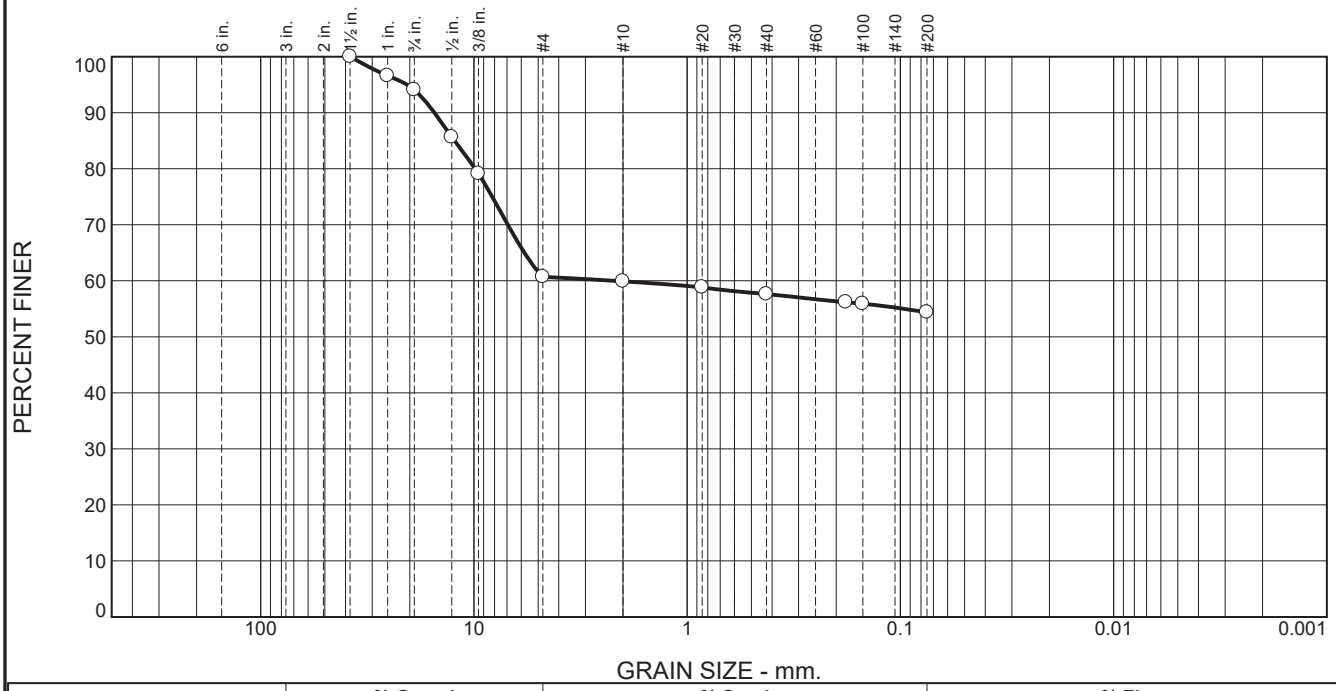
Date Sampled: 1/20/21

DOWL

Client: MDT
Project: BBP-Yellowstone River CE Services

Project No: 4024.20946.03 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.9	33.4	0.8	2.3	3.2	54.4	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1	96.6		
.75	94.1		
.5	85.7		
.375	79.1		
#4	60.7		
#10	59.9		
#20	58.8		
#40	57.6		
#80	56.2		
#100	55.9		
#200	54.4		

* (no specification provided)

Material Description

Gravelly Lean CLAY

Atterberg Limits (ASTM D 4318)

PL= 15 **LL=** 48 **PI=** 33

Classification

USCS (D 2487)= CL **AASHTO (M 145)=** A-7-6(14)

Coefficients

D_{90}= 15.3369 D_{85}= 12.3341 D_{60}= 2.2319
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Sampled by DOWL
F.M.=2.76

Date Received: 1/21/21 **Date Tested:** 1/26/21

Tested By: CDC

Checked By: DAR

Title: Geotechnical Engineer

Location: Drilled Shaft Cuttings - Shale and Gravel **Date Sampled:** 1/20/21
Sample Number: 34887

DOWL

Client: MDT
Project: BBP-Yellowstone River CE Services

Project No: 4024.20946.03 **Figure**

Billings Bypass – Haul Road - 4199005
Billings, Montana

Appendix D:

Photographic Log

TP-1 – General Location – Sta. 142+00

TP-1 – Gravel at 2 Feet

TP-1 – Gravel at 5 Feet

TP-1 – Shale at Bottom of Pit

TP-1 – Side Wall

TP-2 – Crusher Reject Material

TP-2 – Shale at Bottom of Pit

TP-2 – Pit Wall

TP-3 – Test Pit Location – Sta. 131+80

TP-3 – Gravel in Upper 5 Feet

TP-3 – Gravel and Cobbles at Bottom of Pit

TP-3 – Pit Wall

TP-4 – General Location – Sta. 125+00

TP-4 – Gravel in Bottom of Pit at 3 Feet

TP-4 – Gravel in Upper 7 Feet

TP-4 – Pit Wall

TP-5 – Gravel in Bottom of Pit at 3 Feet

TP-5 – Silty Sand in Upper 6 Feet

TP-5 – Pit Wall

Attachment 3: Railroad Overpass BRR/BA Addendum Report

Railroad Overpass Addendum to Final Biological Resources Report / Biological Assessment

MDT Activity 196

BBP – Railroad O'pass
NCDP-MT 56(55)
CN: 4199005

Prepared for:

MONTANA MDT DEPARTMENT OF TRANSPORTATION
2701 Prospect Avenue
P.O. Box 201001
Helena, MT 59620-1001

Prepared by:

DOWL

1300 Cedar Street
Helena, Montana 59601

October 29, 2020

Principal Author:

Emily Peterson
DOWL Environmental Manager
406.442.0370

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

LIST OF ACRONYMS

BA……Biological Assessment
BMP……..……..Best Management Practices
BRR……..……..…….. Biological Resources Report
CWA……Clean Water Act
FEIS……..……...……Final Environmental Impact Statement
FWP……..…… Montana Fish, Wildlife, and Parks
MDT……Montana Department of Transportation
MTNHP……..……Montana Natural Heritage Program
NRCS…… Natural Resource Conservation Service
NWI……..…… National Wetland Inventory
ROD……..…… Record of Decision
USACE……United States Army Corps of Engineers
USGS……..……United States Geological Service
USFWS……United States Fish & Wildlife Service

EXECUTIVE SUMMARY

A Final Biological Resources Report/Biological Assessment (BRR/BA) was completed for the Billings Bypass in November 2011. Two addenda to that report were completed in June 2012 and August 2013. The 2011 BRR/BA Report and the 2012 report addendum served as a basis for informal consultation with the US Fish and Wildlife Service (USFWS) concerning potential effects of future Billings Bypass projects on federally listed species. The August 2013 addendum was completed to confirm there had been no changes to the USFWS Yellowstone County list of threatened and endangered species since the 2012 addendum and confirm the USFWS determination was still current. Impacts to biological resources were also evaluated in the 2014 Billings Bypass Final Environmental Impact Statement (FEIS).

Due to the Billings Bypass project now being split into six construction projects and the time lapse since the August 2013 addendum and 2014 FEIS, BRR/BA Addendums are being prepared for each project segment as updates to the original BRR/BA, addenda, and Billings Bypass FEIS.

This BRR/BA Addendum Report has been prepared for the Railroad Overpass project segment of the Billings Bypass, to document changes in the Railroad Overpass project vicinity from what was presented in the November 2011 BRR/BA, subsequent 2012 and 2013 addenda, and the 2014 FEIS. The addendum includes updates to the Railroad Overpass project description. It also provides general wildlife and vegetation updates, aquatic resources and wetlands updates, state species of concern updates, and updated information on federally threatened and endangered species within the Railroad Overpass project vicinity. The addendum will be included as part of the FEIS Re-evaluation for the Railroad Overpass project segment.

ADDENDUM SUMMARY

The Railroad Overpass study area, proposed design, existing conditions, avoidance and minimization measures, impacts, and recommended conservation measures described in the 2011 BRR/BA, subsequent 2012 and 2013 addenda, and the 2014 Billings Bypass FEIS are still valid and remain unchanged except as detailed below.

- Refinements/changes in the Railroad Overpass project design since the BRR/BA and FEIS include constructing a single bridge, rather than two side-by-side bridges, over the Montana Rail Link (MRL) railroad tracks and Coulson Road. The single structure would have two, 12-foot travel lanes, 8-foot shoulders, and 1-foot concrete barriers for a total width of 42-feet. The bridge structure would be designed to allow for future widening (bypass full buildout) to accommodate two additional 12-foot travel lanes. In addition, a temporary connector from the new bypass to Coulson Road would be constructed to allow access/connectivity to Coulson Road in the interim while the subsequent project segment (the segment from Railroad Overpass to the Johnson Interchange) is developed. The temporary connection would be a two-lane, double tee connection. The temporary connector would be removed when the subsequent project segment is built.

- A wetland delineation was completed in 2011 as part of the developing Billings Bypass FEIS. As more than five years has passed since the original wetland delineation was conducted and to ensure all wetlands were identified within the refined design alignment for the Railroad Overpass project, a wetland delineation was conducted in May 2017. During the 2017 wetland delineation effort, the 2011 wetland boundaries were updated to current conditions. No additional wetlands along this segment of the bypass were identified. Under the proposed roadway and bridge construction outlined in the 2014 FEIS for the Railroad Overpass segment, approximately 0.23 acre of wetland impact was determined. Permanent wetland impact as a result of the refined Railroad Overpass project design and updated wetland delineation is approximately 0.05 acre. The decrease in wetland impacts results from changes in wetland boundaries and wetlands no longer existing (due to agricultural practices) during the 2017 field delineation.

- The 2020 state Species of Concern recorded occurrences list from Montana Natural Heritage Program (MTNHP) identified 14 wildlife Species of Concern and one plant Species of Concern within three miles of the Railroad Overpass Project. Eleven of these Species of Concern were discussed in the 2011 BRR/BA and 2014 FEIS. No additional impacts or concerns related to the 11 original species have been identified since the 2011 BRR/BA and 2014 FEIS. Of the remaining three wildlife species and one plant species not discussed in the 2011 BRR/BA and 2014 FEIS, suitable habitat is found within the Railroad Overpass project vicinity for listed species. Direct mortality to some species may occur due to inability to disperse during construction. Temporary noise related impacts would also occur during construction.

- Current 2019 Montana Fish, Wildlife, and Parks (FWP) observation data on Bald Eagles shows several documented occurrences of Bald Eagle and Bald Eagle nests along the Yellowstone River Corridor; however, no Bald Eagle nests or occurrences have been documented within 0.25 mile of the project limits. MTNHP data shows a nesting Bald Eagle was documented in May 2016 a little over 0.25 mile northwest of the Railroad Overpass northern limits. FWP noted that this nest has since blown down. Therefore, additional minimization measures and timing restrictions for the Railroad Overpass segment are not proposed.

- The Greater Sage-Grouse (*Centrocercus urophasianus*), black-footed ferret (*Mustela nigripes*), and Sprague's Pipit (*Anthus spragueii*) have been removed from the June 2020 list of endangered, threatened, proposed, and candidate species for Yellowstone County. Therefore, the project effect determinations for these species stated in the 2011 BRR/BA, 2012 addendum, and the USFWS 2012 concurrence letter will remain valid. Red Knot (*Calidris canutus rufa*) has been added to the Yellowstone County list. Whooping Crane (*Grus americana*) remains on the list.

  There are no records of Red Knot or Whooping Crane breeding in the state. Both species are known to migrate through Montana on occasion in the spring and fall as they head to breeding territories in northern Canada and the Arctic, respectively. There are three observations for Whooping Crane within a 30-mile radius of the proposed Railroad Overpass project over the last 100 years. The nearest observation

was documented more than 10 miles to the northeast as a fly-over in April 2010. One observation of Red Knot is documented less than 1.0 mile southwest of the proposed Railroad Overpass project limits. This individual was a transient (non-breeding and short-term) documented in 1975, and not seen since. Two other observations in the general geographic area are greater than 30 miles from the project vicinity. Neither the Whooping Crane nor Red Knot would be anticipated in the Railroad Overpass project vicinity as limited-to-no-appropriate habitat is present. The documented observations of these species are individuals flying over the general area, or, as in the case of the Red Knot, an unanticipated short-term stopover. Therefore, a ***No Effect*** determination has been made for the proposed Railroad Overpass activities for both the Whooping Crane and Red Knot.

- On September 22, 2015, USFWS determined that the protection for the Greater Sage-Grouse under the Endangered Species Act was no longer warranted and withdrew the species from the candidate species list. In Montana, the state has management authority over Sage Grouse as outlined under the 2015 Greater Sage-Grouse Stewardship Act and Montana Governor's Executive Orders 10-2014, 12-2015, and 21-2015. The Sage Grouse Habitat Conservation Program was created to facilitate implementation of the Executive Orders. State actions implemented by MDT in designated Greater Sage-Grouse habitat must comply with the conservation program.

  The Railroad Overpass project segment is not within Greater Sage-Grouse designated core habitat, connectivity habitat, or general habitat. The nearest designated Sage Grouse habitat, which is general habitat, is approximately 1.75 miles northwest of the proposed segment. The Railroad Overpass project activities are consistent with the Montana Sage Grouse Conservation Strategy.

1.0 INTRODUCTION

Due to availability and type of funding, the Montana Department of Transportation (MDT) will implement Phase I of the Billings Bypass Project as six separate construction projects. The third potential project to be constructed as part of Phase I is the Railroad Overpass project. This segment of the Billings Bypass is located north/northeast of the community of Lockwood, within Yellowstone County, Montana. The project begins at the southern terminus of the Yellowstone River project segment and proceeds southeast and south approximately 1.2 miles, crossing over the Montana Rail Link (MRL) railroad tracks and Coulson Road with a newly constructed overpass bridge. The Railroad Overpass project is located within Sections 07, 17, and 18 of Township 1 North, Range 27 East (Figure 1).

This Biological Resources Report/Biological Assessment (BRR/BA) Addendum Report has been prepared as part of BRR/BA re-evaluation of the Railroad Overpass segment of the Billings Bypass project. This report provides general biological resources updates, aquatic resources and wetlands updates, state Species of Concern updates, and updated information on federally threatened and endangered species within the Railroad Overpass project vicinity since the August 2013 BRR/BA addendum and 2014 Billings Bypass Final Environmental Impact Statement (FEIS). The report also includes an updated assessment of potential impacts to these resources as a result of the proposed Railroad Overpass project.

For the purposes of this document, project limits refers to the limits of potential construction; whereas, project vicinity refers to a three-mile radius around the project limits in which specific biological resources are evaluated.

2.0 BRR/BA SECTION 1.1 – PROJECT DESCRIPTION UPDATES

The preferred alternative for the Railroad Overpass project segment outlined in the 2014 Billings Bypass FEIS and ROD includes constructing a new roadway alignment that begins at the southern terminus of the Yellowstone River project segment and extends southeast and south, crossing over the MRL railroad tracks, and ending just south of Coulson Road. The Phase I typical section would consist of two 12-foot travel lanes and 8-foot shoulders. Horizontal and vertical alignments and side slopes are proposed to meet criteria for a 55 mile-per-hour (mph) design speed. At full buildout (Phase II), the roadway would be widened to include an additional two, 12-foot travel lanes. These Railroad Overpass improvements are still valid and remain unchanged.

Design Refinement/Change 1: As outlined in the FEIS and ROD, the full-buildout preferred alternative for the MRL and Coulson Road crossing included side-by-side, two-lane bridges at one location. The current bridge design is to construct a single steel structure, with five spans and four lines of welded steel girders, that is approximately 730 feet in length. Constructing a single structure would reduce potential impacts to the railroad and result in a cost savings over time. The new bridge structure would include two 12-foot travel lanes, 8-foot shoulders, and 1-foot concrete barriers for a total width of 42-feet. The vertical clearance of the bridge over the MRL railroad tracks is proposed at 23.75 feet. The bridge steel structure would be designed to allow for future widening (bypass full buildout) to accommodate two additional 12-foot travel lanes.

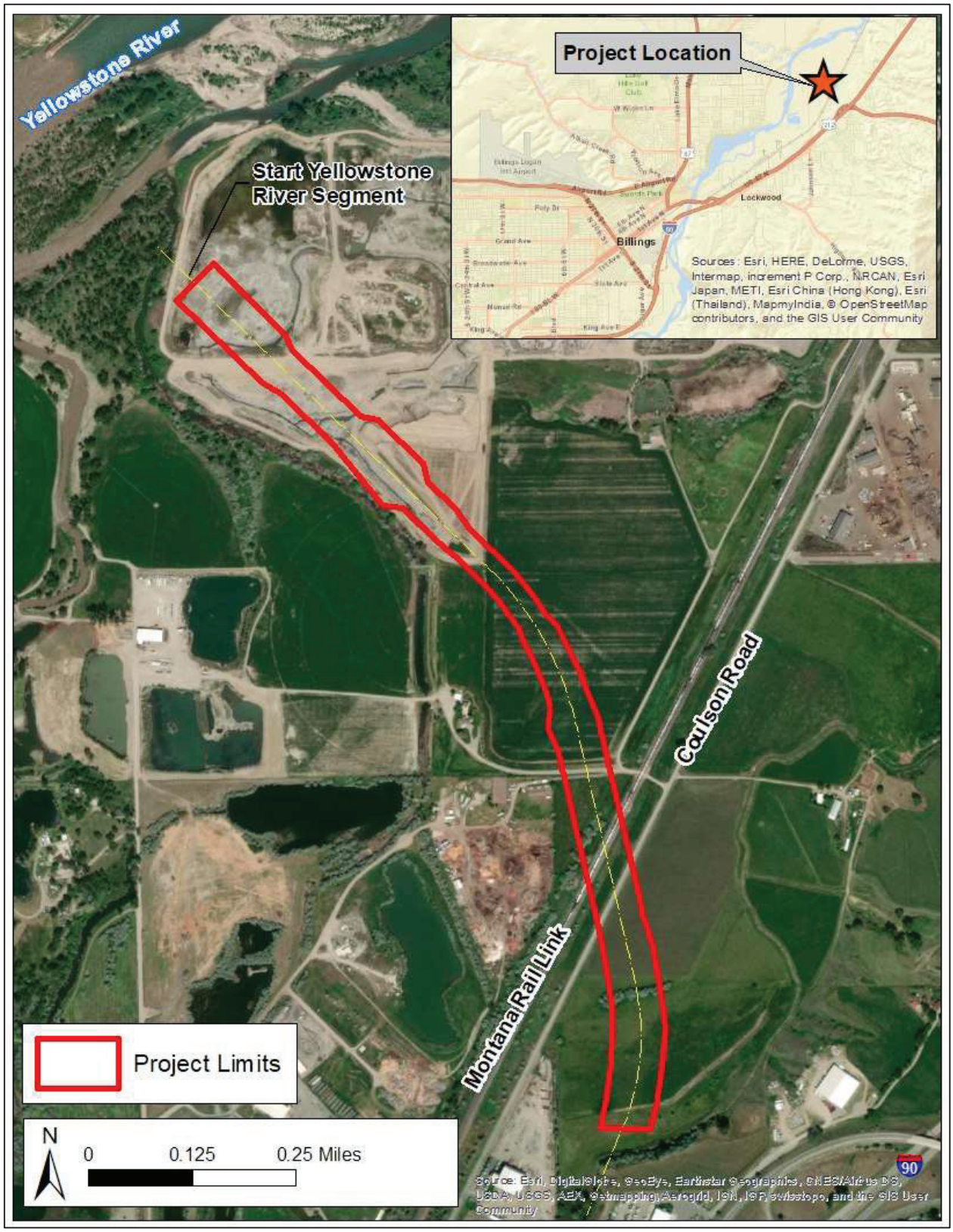


Figure 1. Project Limits and Vicinity

Design Refinement/Change 2: Because the Railroad Overpass segment ends just south of Coulson Road, and it may be several years before the subsequent segment is built, which connects the Railroad Overpass segment to the Johnson Interchange, a temporary connector from the new bypass to Coulson Road would be constructed to allow access/connectivity to Coulson Road in the interim. The temporary connection would be a two-lane, double tee connection that extends from the west side of the bypass alignment to Coulson Road. The temporary connector would be removed when the subsequent project segment is built. This design change was not outlined in the 2014 FEIS and ROD.

3.0 BRR/BA Section 3.0 – General Vegetation and Wildlife

The Railroad Overpass project limits, existing general vegetation and general wildlife conditions, avoidance and minimization measures, impacts, and recommended conservation measures described in the 2011 BRR/BA, subsequent 2012 and 2013 addenda, and the 2014 Billings Bypass FEIS are still valid and remain unchanged. The refined design for Railroad Overpass is not anticipated to greatly increase or reduce impacts to general vegetation and general wildlife and will not be addressed further in this addendum report.

4.0 BRR/BA SECTION 4.0 – AQUATIC RESOURCES

4.1 WATERWAYS

Methods

In 2011, a wetland delineation was completed as part of the developing Billings Bypass EIS. As it has been more than five years since the original wetland delineation was conducted and to ensure all wetlands and other waters were identified within the refined design alignment for the Railroad Overpass project, a new wetland delineation was conducted in May 2017. Prior to the field visit, the Railroad Overpass project limits were researched for the potential presence of aquatic resources. Various mapping resources were used, including the US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, US Geological Service (USGS) topographic quad maps, and aerial photographs. During the site visit, the project limits were investigated for waterways and other aquatic resources according to the US Army Corps of Engineers (USACE) Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification (USACE, 2005). Wetlands and waterways identified during the May 2017 field visit are shown in Appendix A.

Results

No waterways, lakes, ponds, or other non-wetland aquatic features were identified within the Railroad Overpass project limits. One, unnamed drainage was identified directly adjacent to the project limits. In the 2011 delineation, this drainage was delineated entirely as wetland. However, a review of the USFWS NWI database identified this drainage as Riverine, Lower Perennial, Unconsolidated Bottom, which is Semi-permanently Flooded (R2UBF). During the 2017 delineation effort, flowing surface water, approximately 4 to 5 feet deep, was noted in the channel with an emergent fringe wetland along both banks. This aquatic resource has been updated to include surface water within a channel that

varies from 6 to 15 feet wide. The drainage appears to have been channelized in the immediate area and receives both irrigation flow and groundwater discharge. The drainage eventually flows into the Yellowstone River.

Potential Impacts, Avoidance, Minimization, and Recommended Conservation Measures

Current designs for the Railroad Overpass segment would have no permanent impact on the unnamed drainage, as the drainage parallels the project limits directly to the west and is just outside of the project's proposed construction and right-of-way limits.

MDT Standard Specifications for Road and Bridge Construction (2020) effectively address resources including water pollution controls as defined by state, local, and federal laws and regulations. These requirements limit vegetation disturbance within the staked boundaries of the project, thus minimizing effects on surrounding, more productive habitats, and reducing erosion during construction.

4.2 GENERAL AQUATIC SPECIES

There are no waterways within the Railroad Overpass project segment and no aquatic species are likely to occur. The closest waterway is an unnamed drainage directly west of the Railroad Overpass proposed project limits and will not be impacted. Therefore, the refined design for Railroad Overpass is not anticipated to impact aquatic species.

5.0 BRR/BA SECTION 5 – SPECIES OF CONCERN and SPECIAL STATUS SPECIES

Methods

A data request was submitted to MTNHP to determine if there were any changes to state Species of Concern or Special Status Species in or near the Railroad Overpass project vicinity since the 2011 BRR/BA, subsequent 2012 and 2013 addenda, and the 2014 Billings Bypass FEIS (MTNHP, 2020a). Additionally, Montana FWPs Bald and Golden Eagle information was requested from MTNHP. Appendix B provides all information received from the formal MTNHP request.

Results

Documented species occurrences of 14 wildlife state Species of Concern and one plant Species of Concern were recorded within 3.0 mile of the Railroad Overpass project limits (Appendix B, MTNHP, 2020a). Eleven of these species have been addressed in the 2011 BRR/BA and 2014 FEIS. Information on these species is still valid and remains unchanged; therefore, no additional discussion on these 11 species is included in this addendum. The four additional recorded Species of Concern not addressed in the 2011 BRR/BA or the 2014 FEIS, their conservation status, habitat requirements, and potential to occur in the project limits are outlined below in Table 1.

Table 1. Updates to State Species of Concern within the Railroad Overpass project vicinity

Species	Status*	Last Observed in Project Vicinity	Habitat Requirements	Potential to Occur in Project Limits
Birds				
Yellow-billed Cuckoo (*Coccyzus americanus*)	S3B, G5	2019	Preferred breeding habitat includes open woodland, parks, and deciduous riparian woodland.	Low potential to occur within the project limits. The corridor has been cleared for gravel pit and agricultural activities; however suitable habitat directly north of the project limits, along the Yellowstone River, is present.
Greater Sage-Grouse	S2, G3, G4	2019	Closely associated with sagebrush habitat types. Adapted to a broad mosaic throughout range, including relatively tall sagebrush, relatively low sagebrush,forb-rich mosaics with low and tall sagebrush, riparian meadows, steppe, scrub willow, and sagebrush savanna (with juniper, ponderosa pine, aspen).	Unlikely to occur in project limits due to lack of suitable habitat.
Mammals				
Little Brown Myotis (*Myotis lucifugus*)	S3, G3	2020	Found in a variety of habitats across a large elevation gradient. Commonly forages over water. Summer day roosts include attics, barns, bridges, snags, loose bark, and bat houses. Known maternity roosts in Montana are primarily buildings. Hibernacula include caves and mines.	Low potential to occur within the project limits. The corridor has been cleared for gravel pit and agricultural activities; however suitable habitat directly north of the project limits, along the Yellowstone River, is present.
Plants				
Bractless Hedge-hyssop *(Gratiola ebracteate)*	S2, G4	2018	Drying mud around ponds in the foothills and on the plains.	Unlikely to occur in project limits due to lack of suitable habitat.

Source: MTNHP, 2020 and Montana Field Guide (fieldguide.mt.gov)
*Key to rankings: G=Global rank based on range-wide status, S=State rank based on status in Montana, S1: At high risk because of extremely limited and/or rapidly declining population numbers, range and/or habitat, making it highly vulnerable to global extinction or extirpation in the state; S2: At risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to global extinction or extirpation in the state; S3: Potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas; S4: Apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining; G4: Uncommon but not rare (although it may be in parts of its range), and usually widespread; G5: Common, widespread, and abundant (although it may be rare in parts of its range). Not vulnerable in most of its range.

Bald and Golden Eagles are dually-protected under the Bald and Golden Eagle Protection Act of 1940 and receive special state status. 2019 Montana FWP observation data on Bald Eagles shows several documented occurrences of Bald Eagle and Bald Eagle nests along the Yellowstone River Corridor; however, no Bald Eagle nests or occurrences have been documented within 0.25 mile of the project limits. MTNHP data shows a nesting Bald Eagle was documented in May 2016 a little over 0.25 mile northwest of the Railroad Overpass northern limits. FWP noted that this nest has since blown down.

MTNHP data shows one observation of a Golden Eagle 1.2 miles northeast of the project limits and two observation 1.5 and 2.0 miles southwest of the project limits. During the May 2017 field visit of the Railroad Overpass project limits, no Golden Eagles or nests were observed within or adjacent to the project limits.

A review of the Montana Sage Grouse Habitat Conservation Map (2020) shows the Railroad Overpass project limits are not within core, general, or connectivity habitat for Greater Sage-Grouse. The nearest designated Sage Grouse habitat, which is general habitat, is approximately 1.75 miles northwest of the Railroad Overpass project segment.

Potential Impacts, Avoidance, Minimization, and Recommended Conservation Measures

Impacts to 11 state Species of Concern, along with avoidance/minimization measures and recommended conservation measures, are described in the 2011 BRR/BA, subsequent 2012 and 2013 addenda, and the 2014 Billings Bypass FEIS, and still remain valid and unchanged.

Of the four additional Species of Concern, some may occur within the Railroad Overpass project limits, as suitable habitats for these species are present within the general vicinity of the project. The project limits would likely be primarily used for forage and migration.

Permanent vegetation impacts would occur within the proposed construction limits, with both upland and wetland habitat being impacted. For smaller species, direct mortality may occur due to disturbance of habitat and inability to disperse during construction. Permanent impacts to mature trees and shrubs may also affect avian habitat. In order to maintain compliance with USFWS and Migratory Bird Treaty Act guidance, disruption to nesting birds and disturbance of active nests will be avoided. Measures would be implemented to avoid the taking of migratory birds, their eggs, hatchlings, or fledglings during construction. This will include removing any suitable nesting habitats (i.e., trees and shrubs) existing within the construction limits, and that would be affected by construction, outside of the nesting season (August 16 to April 15). If an active nest, including before or after the local nesting window, is discovered, the nest will be left in place and protected until the young hatch and depart.

Temporary impacts to Species of Concern that may be present in the area include temporary loss of some habitat within the construction zone due to clearing for construction activities. Construction activities may also affect individuals through noise, vibration, human activity, construction equipment, and temporary disruption to foraging and migration.

MTNHP 2019 observation data on Bald Eagles shows several documented occurrences of Bald Eagle and Bald Eagle nests along the Yellowstone River Corridor; however, no Bald Eagle nests or occurrences have been documented within 0.25 mile of the project limits. Therefore, additional minimization measures and timing restrictions for the Railroad Overpass segment are not proposed.

6.0 BRR/BA SECTION 6 – THREATENED AND ENDANGERED SPECIES - BIOLOGICAL ASSESSMENT

Methods

The June 2020 USFWS Endangered, Threatened, Proposed, and Candidate Species list for Yellowstone County was reviewed to determine if there were any changes in federally listed species in or near the Railroad Overpass project vicinity since the 2011 BRR/BA, subsequent 2012 and 2013 addenda, and the 2014 Billings Bypass FEIS (USFWS, 2020). The MTNHP database for threatened or endangered species was also reviewed for occurrences within and adjacent to the project limits (MTNHP, 2020).

Results

Since the 2011 BRR/BA, subsequent addenda, and the 2014 FEIS, the Greater Sage-Grouse (*Centrocercus urophasianus*), black-footed ferret (*Mustela nigripes*), and Sprague's Pipit (*Anthus spragueii*) have been removed from the list of endangered, threatened, proposed, and candidate species for Yellowstone County. The USFWS determined that the protection for the Greater Sage-Grouse under the Endangered Species Act was no longer warranted and withdrew the species from the candidate species list in September 2015. In April 2016, the USFWS determined that listing the Sprague's Pipit as an endangered or threatened species was not warranted throughout all or a significant portion of its range and removed the species from candidate status.

Currently, the USFWS list by county shows two federally listed species with the potential to occur in Yellowstone County, Montana (Appendix C). These include Whooping Crane (*Grus Americana*) and Red Knot (*Calidris canutus*). Whooping Crane was addressed in the 2011 BRR/BA, subsequent addenda, and 2014 FEIS. Red Knot was not assessed in the 2011 BRR/BA, subsequent addenda, and 2014 FEIS, because Red Knot was not listed until January 12, 2015. The following information is provided in this BRR/BA Addendum Report to supplement the effects analysis.

Red Knot

Species Description

Red Knot is a medium-sized sandpiper that is about 9 to 10 inches (23 to 25 centimeters [cm]) in length (Baker et al. 2013). Red Knot has a distinctive breeding plumage that is salmon-red to brick-red color. It has a light-colored lower belly and under tail region. The back and tail feathers are generally dark gray with light edges and subterminal rust-colored spots (Baker et al. 2013).

Red Knots annually migrate between arctic tundra breeding grounds and marine wintering habitats as far south as Tierra del Fuego, an annual migration distance of up to 30,000

km (Baker et al. 2013), using stopover sites in the Northern Great Plains of the United States and Canada.

Migratory stopovers in Montana are rare but are most common at larger wetlands. The majority (60 percent) of the documented migratory stopovers in Montana have been at Freezeout Lake, Benton Lake National Wildlife Refuge, and Lake Bowdoin National Wildlife Refuge (FWP, 2020).

Reason for Decline and Federal Status

Red Knot was listed as Threatened on January 12, 2015, due to 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 (Federal Register 79(238):73706-73748).

Occurrence in Project Limits

The last known observation of a Red Knot in the vicinity of the Railroad Overpass project limits was in 1975. The observation was of a transient individual.

Potential Impacts, Avoidance, Minimization, and Recommended Conservation Measures

There are no records of Red Knot or Whooping Crane breeding in the state, although they are known to migrate through Montana on occasion in the spring and fall as they head to breeding territories in northern Canada and the Arctic, respectively. There are three observations for Whooping Crane within a 30-mile radius of the proposed Railroad Overpass project over the last 100 years. The nearest observation was documented more than 10 miles to the northeast as a fly-over in April 2010.

One observation of Red Knot is documented less than 1.0 mile from the proposed Railroad Overpass project limits. This individual was a transient (non-breeding and short-term) documented in 1975, and not seen since. Neither of these species would be anticipated in the project vicinity as limited-to-no-appropriate habitat is present and neither species is documented as spending any considerable time in the state. The documented observations of these species are individuals flying over the general area, or, as in the case of the Red Knot, an unanticipated short-term stopover. Therefore, a ***No Effect*** determination has been made for the proposed Billings Bypass Railroad Overpass project activities for both the Whooping Crane and Red Knot.

7.0 WETLANDS

Methods

In 2011, a wetland delineation was completed as part of the developing Billings Bypass EIS. As more than five years has passed since the original wetland delineation was conducted and to ensure all wetlands and other waters were identified within the refined design alignment for the Railroad Overpass project, new wetland delineations were conducted in May 2017. Prior to the field visit, the Railroad Overpass project limits were

researched for the potential presence of wetlands. Various mapping resources were used, including USFWS NWI maps, USGS topographic quad maps, aerial photographs, and Natural Resource Conservation Service (NRCS) soils maps. The 2011 Billings Bypass wetland delineation information was also reviewed.

During the site visit, wetland delineations were conducted following the Routine Method described in the USACE wetland delineation manual (USACE, 1987), and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (USACE, 2010). To capture all wetlands that could be potentially impacted by the project, a 60-foot survey buffer off of the proposed Railroad Overpass project right-of-way line was used. Wetlands and waterways identified during the May 2017 field visit are shown in Appendix A.

Results

The 2011 wetland delineation effort identified two wetlands within the Railroad Overpass project limits, Wetlands R and D9, and one wetland directly adjacent to the project limits, Wetland D8. During the May 2017 wetland delineation, the 2011 wetland boundaries for these wetlands, within the project limits and 60-foot buffer area, were updated to current conditions. This included re-delineating the wetland boundaries for Wetlands R and D8 with a map-grade GPS unit. Wetland D9 could not be located during the 2017 delineation effort. The wetland was located in a large agricultural field and appeared to have been buried/plowed over through farming activities.

To meet current naming conventions, Wetland R was relabeled as Wetland RR-WL1 and Wetland D8 was relabeled to Wetland RR-WL2. No additional wetlands were identified within the Railroad Overpass project limits during the 2017 delineation effort. Table 2 provides the 2017 updated information for all wetlands identified within the project limits and the 60-foot buffer area.

Table 2. 2017 Railroad Overpass Segment Delineated Wetlands

Wetland	2017 Acreage	Wetland Cowardin Classification	MDT Functional Rating	Likely Jurisdictional	Wetland Description/Jurisdictional Justification
RR-WL1	0.117	PEM	IV	Yes	Wetland within an irrigation ditch/drain. Flows eventually end up in Yellowstone River.
RR-WL2	1.58	PEM	III	Yes	Fringe wetland along an unnamed drainage that collects irrigation drain water and groundwater. Flows into the Yellowstone River.

Potential Impacts, Avoidance, Minimization, and Recommended Conservation Measures

Under the scope of work for the Railroad Overpass segment outlined in the 2011 BRR/BA, subsequent addenda, and 2014 FEIS, approximately 0.23 acre of wetland impact was determined. Wetland impacts as a result of the refined Railroad Overpass design and

updated 2017 wetland delineation are approximately 0.05 acre. This includes impacts to only wetland RR-WL1. The decrease in wetland impacts results from changes in wetland boundaries and wetlands no longer existing (due to agricultural practices) during the 2017 field delineation.

Impacted wetlands considered jurisdictional by the USACE would require permitting under Section 404 of the CWA. A permit application would be submitted to the USACE when final construction limits are finalized through design. The USACE has the authority to determine appropriate mitigation for jurisdictional wetlands that are impacted by fill placement or ground disturbance. Off-site wetland mitigation is recommended to accommodate the mitigation acreage that may be required to offset wetland impact acreage. Consultation with the USACE will be necessary to determine acceptable mitigation sites. Unavoidable wetland impacts may be mitigated at an established MDT Wetland Reserve or through an established in-lieu fee program. Final mitigation requirements to satisfy unavoidable impacts to wetlands require USACE approval prior to project construction and would occur during the project permitting phase. In addition, mitigation for wetland impacts would be required for federally funded highway projects under 23 CFR Part 777.

8.0 REFERENCES

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APPENDIX A

2017 RAILROAD OVERPASS WETLAND DELINEATION FIGURES

Legend

- Data Plot
- Delineated Wetlands
- Wetland Survey Limits
- Construction Easements
- New ROW Line
- ConstructionLimits
- Stationing
- Alignment Center Line
- Bridge
- Shoulder Delineation
- Flow Arrow

N
W E
S

0 100 200 400 Feet

Billings Bypass
Railroad Overpass
Wetland and Other Aquatic Resources Delineation

Sheet 1

Legend

- Wetland Survey Limits
- Construction Easements
- New ROW Line
- ConstructionLimits
- Stationing
- Alignment Center Line
- Bridge
- Shoulder Delineation
- Flow Arrow

N
W E
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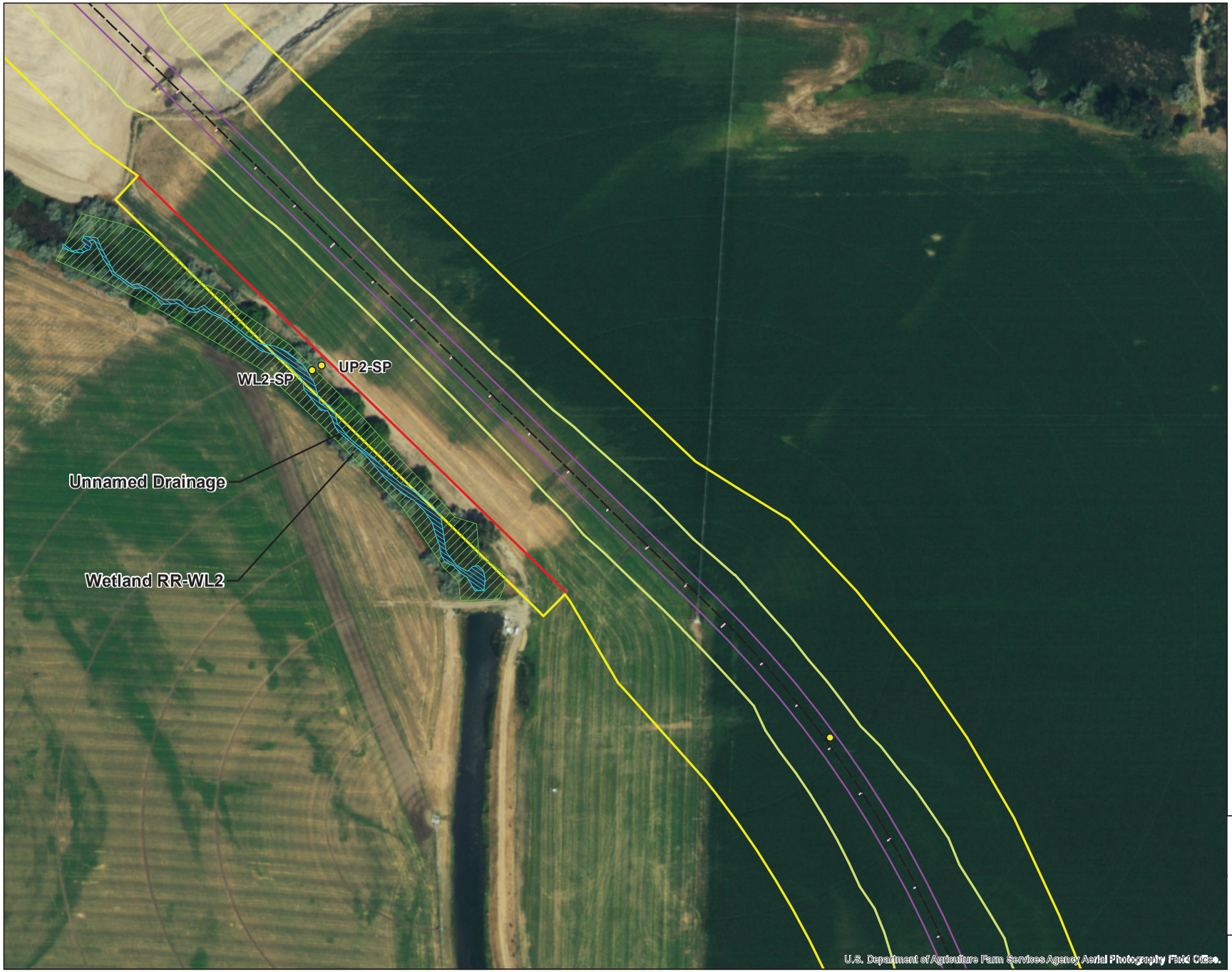
0 100 200 400 Feet

Billings Bypass
Railroad Overpass
Wetland and Other Aquatic Resources Delineation

Sheet 2



Legend

- Data Plot
- Waterway
- Delineated Wetlands
- Wetland Survey Limits
- Construction Easements
- ConstructionLimits
- Stationing
- Alignment Center Line
- Shoulder Delineation
- Flow Arrow

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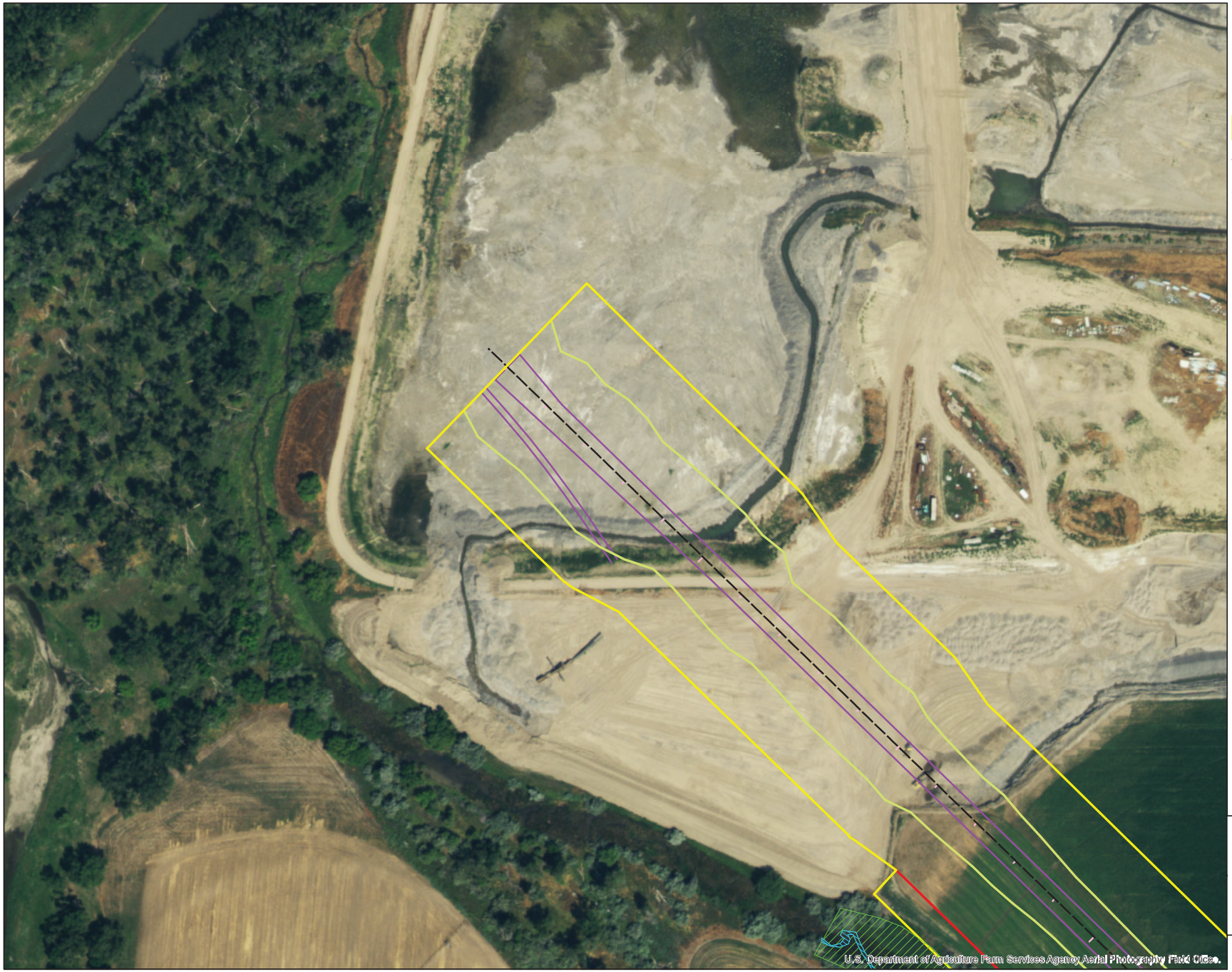
0 100 200 400 Feet

Billings Bypass Railroad Overpass Wetland and Other Aquatic Resources Delineation

Sheet 3



Legend

- Waterway
- Delineated Wetlands
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- ConstructionLimits
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- Shoulder Delineation
- Flow Arrow

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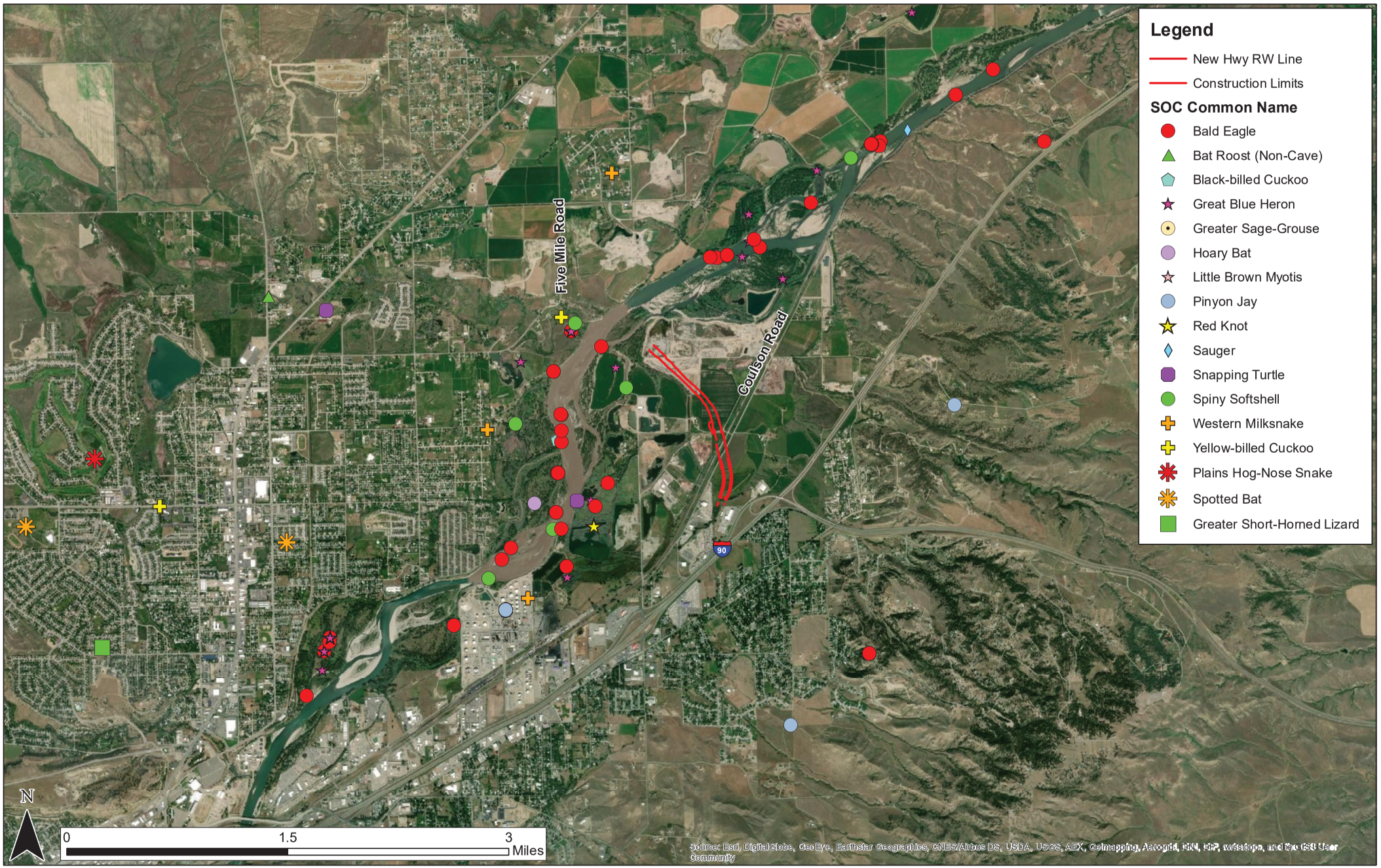
0 100 200 400 Feet

Billings Bypass
Railroad Overpass
Wetland and Other Aquatic Resources Delineation

Sheet 4

APPENDIX B

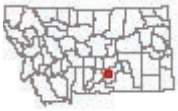
MONTANA SPECIES OF CONCERN IN PROJECT VICINITY



MTNHP Recorded Species of Concern (2020) - Railroad Overpass Segment

Environmental Summary

MONTANA
Natural Heritage Program
1515 East 6th Avenue
Helena, MT 59620
(406) 444-5363
mtnhp.org



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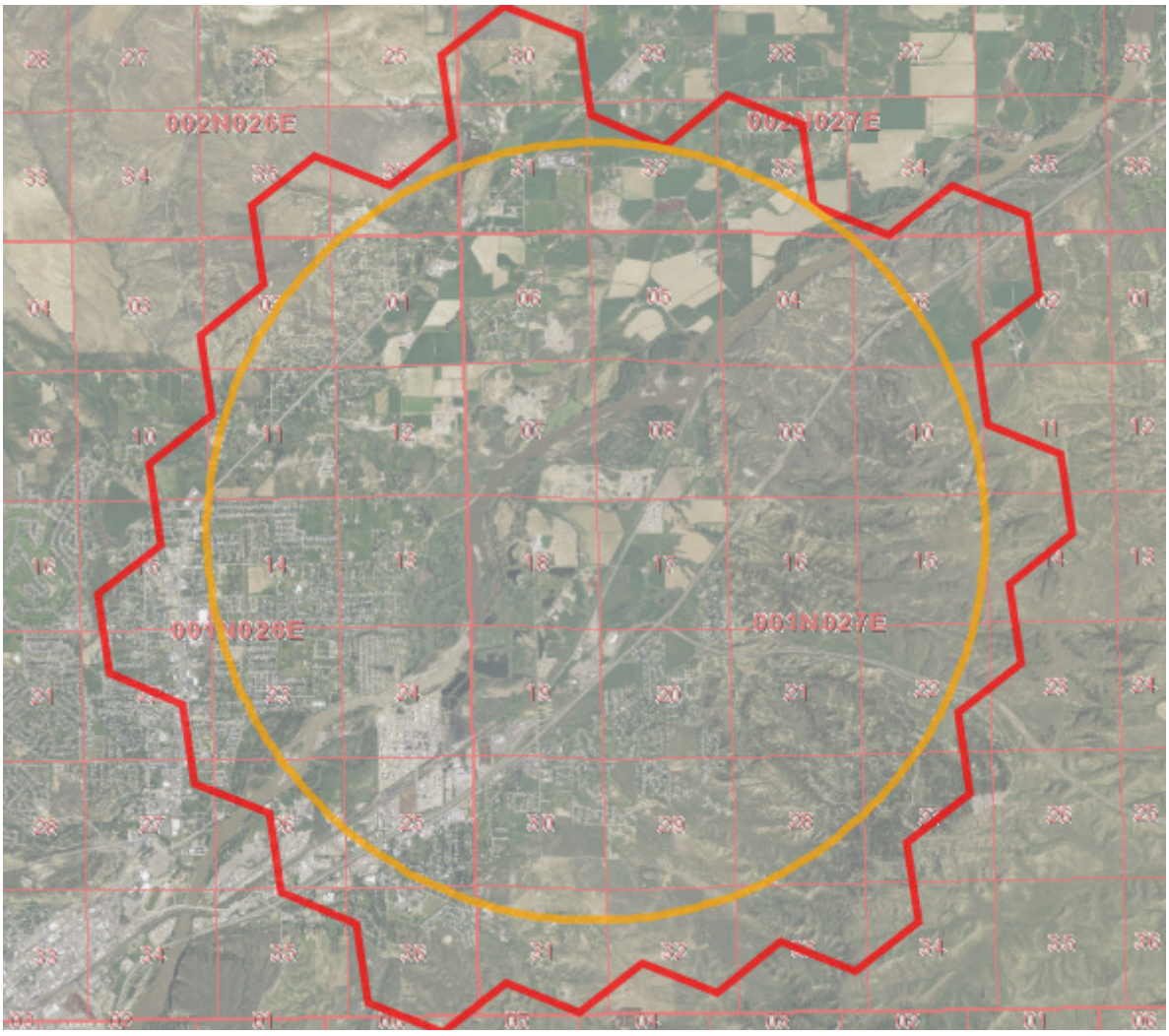
45.89576	-108.48516

Summarized by:
21mdt0004 Billings Bypass
(Custom Area of Interest)



Suggested Citation
Montana Natural Heritage Program. Environmental Summary Report.
for Latitude 45.78271 to 45.89576 and Longitude -108.32698 to -108.48516. Retrieved on 9/14/2020.

The Montana Natural Heritage Program is a program of the Montana State Library's Natural Resource Information System. It is operated as a special program under the Office of the Vice President for Research and Creative Scholarship at the University of Montana, Missoula.

The Montana Natural Heritage Program is part of NatureServe – a network of over 80 similar programs in states, provinces and nations throughout the Western Hemisphere, working to provide comprehensive status and distribution information for species and ecosystems.

Montana Natural Heritage Program · Montana State Library · University of Montana · NatureServe

Table of Contents

Introduction to Environmental Summary Report

The Environmental Summary report for your area of interest consists of introductory and related materials in this PDF and an Excel workbook with worksheets summarizing information managed in the Montana Natural Heritage Program's (MTNHP) databases for: (1) species occurrences; (2) other observed species without Species Occurrences; (3) other species potentially present based on their range, presence of associated habitats, or predictive distribution model output if available; (4) structured surveys (organized efforts following a protocol capable of detecting one or more species); (5) land cover mapped as ecological systems; (6) wetland and riparian mapping; (7) land management categories; and (8) biological reports associated with plant and animal observations. In order to do this in a consistent manner across Montana and allow for rapid delivery of summaries, we have intersected this information with a uniform grid of hexagons that have been used for planning efforts across the western United States (e.g. Western Association of Fish and Wildlife Agencies - Crucial Habitat Assessment Tool). Each hexagon is one square mile in area and approximately one kilometer in length on each side. Summary information for each data layer is then stored with each hexagon and those summaries are added up to an overall summary for the report area you have requested. Users should be aware that summaries do not correspond to the exact boundaries of the polygon they have specified, but instead are a summary across all hexagons intersected by the polygon they specified.

In presenting this information, MTNHP is working towards assisting the user with rapidly assessing the known or potential species and biological communities, land management categories, and biological reports associated with the report area. We remind users that this information is likely incomplete and may be inaccurate as surveys to document species are lacking in many areas of the state, species' range polygons often include regions of unsuitable habitat, methods of predicting the presence of species or communities are constantly improving, and information is constantly being added and updated in our databases. **Field verification by professional biologists of the absence or presence of species and biological communities in a report area will always be an important obligation of users of our data. Users are encouraged to only use this environmental summary report as a starting point for more in depth analyses and are encouraged to contact state, federal, and tribal resource management agencies for additional data or management guidelines relevant to your efforts. Please see the Appendix for introductory materials to each section of the report, additional information resources, and a list of relevant agency contacts.**

MONTANA Natural Heritage Program

Aprogram of the **Montana State Library's Natural Resource Information System** operated by the **University of Montana**.

Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	I Introduced	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	Y Year-round	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		S Summer	
L Low Suitability		W Winter	
I Suitable (introduced range)		M Migratory	
		H Historic	

Latitude	Longitude
45.78271	-108.32698
45.89576	-108.48516

Native Species

Summarized by: **21mdt0004 Billings Bypass** *(Custom Area of Interest)*

Filtered by:

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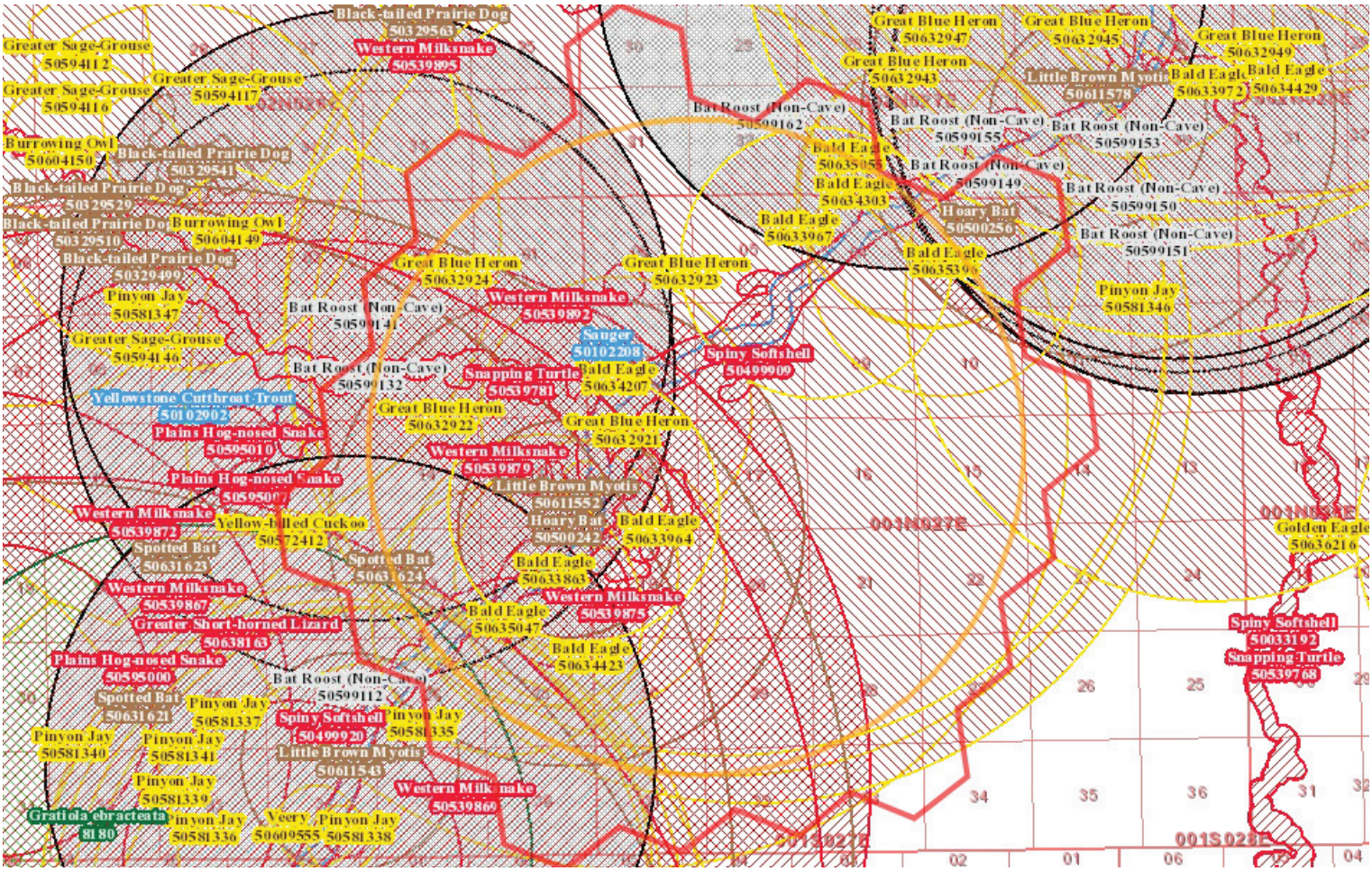

Species Occurrences

	USFWS Sec7	# SO	# Obs	Predictive Model	Associated Habitat	Range
R - Snapping Turtle *(Chelydra serpentina)* SOC		1	2			Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN**

Delineation Criteria Stream reaches and standing water bodies within the species native range where their presence has been confirmed through direct capture or observation or where they are believed to be present based on the professional judgement of a biologist due to confirmed presence in adjacent areas. Occupied stream reaches are buffered up and downstream and into adjoining streams by 6,000 meters to encompass maximum reported annual travel distance. In order to reflect the importance of adjacent terrestrial habitats to survival, stream reaches and standing water bodies are buffered 100 meters into the terrestrial habitat based on PACFISH/INFISH Riparian Conservation Area standards. (Last Updated: Sep 26, 2019)

Predictive Models: N 38% Suitable (native range) (deductive) **Associated Habitats:** C 11% Common, O 1% Occasional

R - Spiny Softshell *(Apalone spinifera)* SOC		1	7			Y

View in Field Guide | View Predicted Models | View Associated Habitat | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Delineation Criteria Stream reaches and impounded streams within the species' native range where the species naturally occurs and their presence has been confirmed through direct capture or where they are believed to be present based on the professional judgement of a biologist due to confirmed presence in adjacent areas. In order to reflect the importance of adjacent terrestrial habitats to survival, stream reaches are buffered 100 meters and impounded streams 50 meters into the terrestrial habitat based on PACFISH/INFISH Riparian Conservation Area standards. (Last Updated: Sep 26, 2019)

Predictive Models: N 31% Suitable (native range) (deductive) **Associated Habitats:** C 10% Common, O 3% Occasional

F - Sauger *(Sander canadensis)* SOC		1	2 +		Not Assigned	Y

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** BLM: **SENSITIVE** FWP SWAP: **SGCN2**

Delineation Criteria Stream reaches and standing water bodies where the species presence has been confirmed through direct capture or where they are believed to be present based on the professional judgement of a fisheries biologist due to confirmed presence in adjacent areas. In order to reflect the importance of adjacent terrestrial habitats to survival, stream reaches are buffered 100 meters, standing water bodies greater than 1 acre are buffered 50 meters, and standing water bodies less than 1 acre are buffered 30 meters into the terrestrial habitat based on PACFISH/INFISH Riparian Conservation Area standards. (Last Updated: Jul 07, 2017)

Predictive Models: N 26% Suitable (native range) (deductive)

R - Western Milksnake *(Lampropeltis gentilis)* SOC — 4 — 3 + — Y

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known on Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN2**

Delineation Criteria Confirmed breeding area based on the presence of a resident animal of any age. Point observation location is buffered by a minimum distance of 300 meters in order to encompass the maximum summer home range size reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Jul 03, 2019)

Predictive Models: O 38% Optimal (inductive), M 62% Moderate (inductive) **Associated Habitats:** C 48% Common, O 15% Occasional

B - Yellow-billed Cuckoo *(Coccyzus americanus)* SOC — 1 — 2 + — S M

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **PS: LT; MBTA; BCC10** USFS: **Threatened on Forests (BRT, LOLO)** BLM: **THREATENED** FWP SWAP: **SGCN3, SGIN** PIF: **2**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 300 meters in order to encompass the maximum foraging area size reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Sep 05, 2019)

Predictive Models: O 13% Optimal (inductive), M 33% Moderate (inductive), L 44% Low (inductive)
Associated Habitats: C 8% Common, O 7% Occasional

B - Bald Eagle *(Haliaeetus leucocephalus)* SSS — 9 — 56 + — Y

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

Special Status Species - Native Species Global: **G5** State: **S4** USFWS: **DM; BGEPA; MBTA; BCC10; BCC11; BCC17** USFS: **Sensitive - Known on Forests (BD, BRT, CG, HLC, KOOT, LOLO)** BLM: **SENSITIVE** PIF: **2**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 2,000 meters in order to be conservative about encompassing the breeding territory and area commonly used for renesting and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 30, 2020)

Predictive Models: O 10% Optimal (inductive), M 21% Moderate (inductive), L 31% Low (inductive)
Associated Habitats: C 11% Common, O 19% Occasional

M - Spotted Bat *(Euderma maculatum)* SOC — 3 — S M

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known on Forests (BD, CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles. Point observation location is buffered by a distance of 10,000 meters in order to encompass the reported maximum foraging distance for the species in British Columbia. If the locational uncertainty associated with the observation is greater than 10,000 meters, the observation is not valid for creation of a species occurrence. (Last Updated: Mar 24, 2020)

Predictive Models: O 8% Optimal (inductive), M 62% Moderate (inductive), L 30% Low (inductive)
Associated Habitats: C 51% Common, O 19% Occasional

B - Pinyon Jay *(Gymnorhinus cyanocephalus)* SOC — 8 — 1 + — Y

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

Species of Concern - Native Species Global: **G3** State: **S3** USFWS: **MBTA; BCC17** FWP SWAP: **SGCN3**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 4,500 meters in order to be conservative about encompassing the home ranges reported for flocks and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Sep 25, 2019)

Predictive Models: O 5% Optimal (inductive), M 82% Moderate (inductive), L 13% Low (inductive)
Associated Habitats: C 8% Common, O 15% Occasional

B - Black-billed Cuckoo *(Coccyzus erythropthalmus)* SOC — 1 — 1 — S M

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN** PIF: **2**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 300 meters in order to be conservative about encompassing home ranges and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Dec 09, 2015)

Predictive Models: O 5% Optimal (inductive), M 44% Moderate (inductive), L 41% Low (inductive) **Associated Habitats:** C 15% Common

B - Great Blue Heron *(Ardea herodias)* SOC — 7 — 37 + — Y S M

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 6,500 meters in order to be conservative about encompassing the areas commonly used for foraging near the breeding colony and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 24, 2020)

Predictive Models: O 5% Optimal (inductive), M 36% Moderate (inductive), L 44% Low (inductive) **Associated Habitats:** C 8% Common

R - Plains Hog-nosed Snake *(Heterodon nasicus)* SOC — 2 — Y

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known on Forests (CG)** BLM: **SENSITIVE**
FWP SWAP: **SGCN2, SGIN**

Delineation Criteria Confirmed breeding area based on the presence of a resident animal of any age. Point observation location is buffered by a minimum distance of 500 meters in order to encompass the maximum summer home range size reported for the congeneric Eastern Hog-nosed Snake and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Sep 26, 2019)

Predictive Models: M 54% Moderate (inductive), L 46% Low (inductive) **Associated Habitats:** C 48% Common, O 2% Occasional

M - Little Brown Myotis *(Myotis lucifugus)* SOC — 3 — 1 — Y

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

Species of Concern - Native Species Global: **G3** State: **S3** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, or definitively identified roosting individuals) of adults or juveniles. Point observation location is buffered by a distance of 1,600 meters in order to encompass the greater than 1,500 meters foraging distance reported for the species in New Brunswick, Canada and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. When cave locations are involved, point observations are mapped in the center of a one-square mile hexagon to protect the exact location of the cave entrance as per the Federal Cave Resource Protection Act and associated regulations (U.S. Code Title 16 Chapter 63, Code of Federal Regulations Title 43 Subtitle A Part 37). The outer edges of the hexagon are then buffered by a distance of 1,600 meters and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. All of the one-square mile hexagons intersecting this buffered area are presented as the Species Occurrence record. (Last Updated: Jan 03, 2020)

Predictive Models: M 44% Moderate (inductive), L 56% Low (inductive) **Associated Habitats:** C 66% Common, O 34% Occasional

M - Hoary Bat *(Lasiurus cinereus)* SOC — 2 — 1 — S M

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles during the active season. Point observation location is buffered by a minimum distance of 3,500 meters in order to be conservative about encompassing the maximum reported foraging distance for the congeneric Lasiurus borealis and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: May 14, 2019)

Predictive Models: M 41% Moderate (inductive), L 59% Low (inductive) **Associated Habitats:** C 53% Common, O 39% Occasional

R - Greater Short-horned Lizard *(Phrynosoma hernandesi)* SOC — 1 — + — Y

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

USFS: **Sensitive - Known on Forests (CG)**
Species of Concern - Native Species Global: **G5** State: **S3** **Sensitive - Suspected on Forests (HLC)** BLM: **SENSITIVE**
FWP SWAP: **SGCN3, SGIN**

Delineation Criteria Confirmed breeding area based on the presence of a resident animal of any age. Point observation location is buffered by a minimum distance of 300 meters in order to encompass habitats supporting other individuals and documented distances moved betweeen summer and winter habitats. Otherwise the point observation is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Apr 01, 2020)

Predictive Models: M 33% Moderate (inductive), L 62% Low (inductive) **Associated Habitats:** C 41% Common

B - Greater Sage-Grouse *(Centrocercus urophasianus)* SOC — 2 — + — Y

View in Field Guide View Predicted Models View Associated Habitat View Range Maps

USFS: **Sensitive - Known on Forests (BD)**
Species of Concern - Native Species Global: **G3G4** State: **S2** **Sensitive - Suspected on Forests (CG, HLC)** BLM: **SENSITIVE**
FWP SWAP: **SGCN2** PIF: **1**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, juveniles, or adults on a lek. Point observations are mapped in the center of a one-square mile hexagon to protect the exact locations of leks. The outer edges of this hexagon are then buffered by a distance of 6,400 meters in order to encompass a body of research indicating that females typically nest within this distance of a lek and that lek numbers are negatively impacted by fossil fuel drilling activities within this distance of a lek. If the locational uncertainty associated with the observation is greater than this distance, it is buffered by the locational up to a maximum distance of 10,000 meters. All of the one-square mile hexagons intersecting this buffered area are presented as the Species Occurrence record. (Last Updated: Sep 25, 2019)

Predictive Models: L 59% Low (inductive) **Associated Habitats:** C 31% Common, O 3% Occasional

V - Gratiola ebracteata *(Bractless Hedge-hyssop)* SOC — 1 — + — Not Available — Not Assigned — Y

View in Field Guide View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2** MNPS: **3**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Apr 26, 2018)

O - Bat Roost (Non-Cave) *(Bat Roost (Non-Cave))* IAH — 9 — Not Available — Not Assigned

View in Field Guide

Important Animal Habitat - Native Species Global: **GNR** State: **SNR**

Delineation Criteria Confirmed area of occupancy based on the documented presence of adults or juveniles of any bat species at non-cave natural roost sites (e.g. rock outcrops, trees), below ground human created roost sites (e.g. mines), and above ground human created roost sites (e.g., bridges, buildings). Point observation locations are buffered by a distance of 4,500 meters in order to encompass the 95% confidence interval for nightly foraging distance reported for Townsendâ€™s Big-eared Bat (a resident Montana bat Species of Concern) and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Oct 22, 2019)

APPENDIX C

US FISH AND WILDLIFE SPECIES LIST FOR YELLOWSTONE COUNTY, MONTANA

United States Department of the Interior
Fish and Wildlife Service
Ecological Services
Montana Field Office
585 Shepard Way, Suite 1
Helena, Montana 59601-6287
Phone: (406) 449-5225, Fax: (406) 449-5339

ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES
MONTANA COUNTIES*
Endangered Species Act

June 10, 2020

C = Candidate
LT = Listed Threatened
LE = Listed Endangered
P = Proposed
PCH = Proposed Critical Habitat
CH = Designated Critical Habitat
XN = Experimental non-essential population

*Note: Generally, this list identifies the counties where one would reasonably expect the species to occur, not necessarily every county where the species is listed

County/Scientific Name	Common Name	Status
BEAVERHEAD		
Spiranthes diluvialis	Ute Ladies' Tresses	LT
Ursus arctos horribilis	Grizzly Bear	LT
Lynx canadensis	Canada Lynx	LT
Gulo gulo luscus	Wolverine	P
Pinus albicaulis	Whitebark Pine	C
BIG HORN		
Mustela nigripes	Black-footed Ferret	LE
BLAINE		
Scaphirhynchus albus	Pallid Sturgeon	LE
Mustela nigripes	Black-footed Ferret	LE
Charadrius melodus	Piping Plover	LT
BROADWATER		
Spiranthes diluvialis	Ute Ladies' Tresses	LT
Lynx canadensis	Canada Lynx	LT
Ursus arctos horribilis	Grizzly Bear	LT
Gulo gulo luscus	Wolverine	P
Pinus albicaulis	Whitebark Pine	C
CARBON		
Lynx canadensis	Canada Lynx	LT, CH
Ursus arctos horribilis	Grizzly Bear	LT
Gulo gulo luscus	Wolverine	P
Zapada glacier	Western Glacier Stonefly	LT
Pinus albicaulis	Whitebark Pine	C

County/Scientific Name	Common Name	Status
SWEET GRASS		
Lynx canadensis	Canada Lynx	LT, CH
Ursus arctos horribilis	Grizzly Bear	LT
Gulo gulo luscus	Wolverine	P
Pinus albicaulis	Whitebark Pine	C
TETON		
Ursus arctos horribilis	Grizzly Bear	LT
Lynx canadensis	Canada Lynx	LT, CH
Calidris canutus rufa	Red Knot	LT
Charadrius melodus	Piping Plover	LT
Gulo gulo luscus	Wolverine	P
Pinus albicaulis	Whitebark Pine	C
TOOLE		
Calidris canutus rufa	Red Knot	LT
Ursus arctos horribilis	Grizzly Bear	LT
Pinus albicaulis	Whitebark Pine	C
TREASURE		
No listings at this time		
VALLEY		
Scaphirhynchus albus	Pallid Sturgeon	LE
Sterna antillarum athalassos	Interior Least Tern	LE
Grus americana	Whooping Crane	LE
Charadrius melodus	Piping Plover	LT, CH
Calidris canutus rufa	Red Knot	LT
Myotis septentrionalis	Northern Long-eared Bat	LT
WHEATLAND		
Lynx canadensis	Canada Lynx	LT
Ursus arctos horribilis	Grizzly Bear	LT
Gulo gulo luscus	Wolverine	P
Pinus albicaulis	Whitebark Pine	C
WIBAUX		
Scaphirhynchus albus	Pallid Sturgeon	LE
Sterna antillarum athalassos	Interior Least Tern	LE
Grus americana	Whooping Crane	LE
Myotis septentrionalis	Northern Long-eared Bat	LT
Charadrius melodus	Piping Plover	LT
YELLOWSTONE		
Grus americana	Whooping Crane	LE
Calidris canutus rufa	Red Knot	LT