REVISED BIOLOGICAL ASSESSMENT FOR MONTANA DEPARTMENT OF TRANSPORTATION AND FEDERAL HIGHWAY ADMINISTRATION

NH 5-2(159)37; UPN: 8008000
US 93 Evaro to Polson (RP 6.8 to 59.0)
Topical Report RSI-2524

prepared for

Montana Department of Transportation
2701 Prospect Avenue
Helena, Montana 59620

October 2016

RESPEC

Revised October 2017 for submittal to USFWS
By: Joe Weigand
Missoula District Biologist
Montana Department of Transportation

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US 93 Evaro to Polson (RP 6.8 to 59.0)
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by

Mark A. Traxler

RESPEC
820 North Montana Avenue, Suite A
Helena, Montana 59601

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(Revised for submittal October 2017)

EXECUTIVE SUMMARY

The Montana Department of Transportation (MDT) and the Federal Highway Administration (FHWA), in cooperation with the Confederated Salish and Kootenai Tribes (CSKT), are proposing to reconstruct approximately 11.9 miles of US 93 in Lake County, Montana, which is referred to as the US 93 Ninepipe/Ronan corridor. The corridor lies within the Flathead Indian Reservation and begins at Red Horn Road/Dublin Gulch Road (reference post [RP] 36.8) and extends north to Baptiste Road/Spring Creek Road (RP 48.7). The purpose of the project is to improve US 93, for traffic flow and roadway safety and to reduce future road maintenance needs [Herrera Environmental Consultants, 2005][1]. This highway segment has been divided into three primary projects with the potential for more splits to occur in the future.

This revised Biological Assessment (BA) addresses current proposed actions in compliance with Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended. This BA is intended to update and will supersede all previous BAs prepared for the US 93 Evaro to Polson highway corridor, the last of which was prepared in January 2005 [Herrera Environmental Consultants, 2005][1]. This revised BA was deemed necessary by the MDT and the U.S. Fish and Wildlife Service (USFWS) primarily because of an exceedance in the allowable "take" of grizzly bears over the last 10-year period along US 93 and regulatory updates that affect bull trout critical habitat designation in the corridor. Additionally, the following regulatory actions have occurred since the last corridor BA was prepared:

- The Bald Eagle (*Haliaeetus leucocephalus*) was removed from the threatened and endangered species list.
- The Gray Wolf (*Canis lupus*) was removed from the threatened and endangered species list.
- The Yellow-billed Cuckoo (*Coccyzus americanus*) was listed as a threatened species.
- The distributional range of the Ute Ladies'-tresses (*Spiranthes diluvialis*) in Montana has been refined and updated to not include Lake County or the Flathead Indian Reservation.
- Wolverine (*Gulo gulo luscus*) was listed as a proposed species.
- Meltwater Lednian Stonefly (*Lednia tumana*) was listed as a proposed species.
- Whitebark Pine (*Pinus albicaulis*) was listed as a candidate species.

Based on the USFWS list of threatened, endangered, and proposed species that may be present in Montana counties [USFWS, 2015][2]; correspondence with the CSKT and USFWS; and

[1] **Herrera Environmental Consultants, 2005.** *Biological Assessment; US 93 Ninepipe/Ronan Improvement Project*, prepared by Herrera Environmental Consultants, Seattle, WA, for the Montana Department of Transportation, Helena, MT, and the Federal Highway Administration, Seattle, WA.

range/habitat descriptions found in technical literature, the following listed, proposed, and candidate species were considered with respect to this project:

- Canada Lynx (*Lynx canadensis*) and critical habitat: Threatened
- Grizzly Bear (*Ursus arctos horribilis*): Threatened
- Yellow-billed Cuckoo (*Coccyzus americanus*): Threatened
- Bull Trout (*Salvelinus confluentus*) and critical habitat: Threatened
- Spalding's Campion (*Silene spaldingii*): Threatened
- Water Howellia (*Howelliea aquatilis*): Threatened
- Wolverine (*Gulo gulo luscus*): Proposed
- Meltwater Lednian Stonefly (*Lednia tumana*): Proposed
- Whitebark Pine (*Pinus albicaulis*): Candidate

A summary of findings for each of these listed species is provided in Table ES-1.

Table ES-1. Summary of Findings for Species Designated as Federally Threatened, Endangered, Proposed, or Candidate and Designated Critical Habitat

Common Name/Scientific Name	Designations[(a)]	Finding
Mammal Species		
Canada Lynx (*Lynx canadensis)* and Designated Critical Habitat	G5, S3 BLM – Special Status USFS – Threatened USFWS-Threatened	No effect
Grizzly Bear (*Ursus arctos horribilis)*	G4, S2S3 BLM-Sensitive USFS – Threatened USFWS – Threatened	May affect, likely to adversely affect
Wolverine (*Gulo gulo luscus*)	G4, S3 BLM-Sensitive USFS – Sensitive USFWS – Proposed	Not Likely to Jeopardize the Continued Existence
Bird Species		
Yellow-billed Cuckoo (*Coccyzus americanus)*	G5, S3B BLM – Special Status USFS – Threatened USFWS – Threatened	No effect
Aquatic Species		
Bull Trout (*Salvelinus confluentus*) and Designated Critical Habitat	G4, S2 BLM – Special Status USFS – Threatened USFWS – Threatened	May affect, likely to adversely affect; No Effect to Critical Habitat
Insect Species		
Meltwater Lednian Stonefly (*Lednia tumana*)	G1G2, S1 BLM-None USFS – None USFWS – Proposed	Not Likely to Jeopardize the Continued Existence
Vegetative Species		
Whitebark Pine (*Pinus albicaulis*)	G3G4, S3 BLM-None USFS – Sensitive USFWS – Candidate	Not Likely to Jeopardize the Continued Existence
Spaulding's Campion (*Silene spaldingii*)	G2, S2 BLM – None USFS – None USFWS – Threatened	No effect
Water Howellia (*Howelliea aquatilis*)	G3, S3 BLM – None USFS – Threatened USFWS – Threatened	No effect
(a) See Appendix B for these definitions.		

[1] U.S. Fish & Wildlife Service, 2017. ***Endangered, Threatened, Proposed, and Candidate Species in Montana Counties*, prepared by U.S. Fish and Wildlife Service, Montana Field Office, Helena, MT.**

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1.0 INTRODUCTION

This revised Biological Assessment (BA) addresses the proposed action in compliance with Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended. This BA is intended to update and will supersede all previous BAs prepared for the US 93 Evaro to Polson highway corridor, the last of which was prepared in January 2005 [Herrera Environmental Consultants, 2005]. This revised BA was deemed necessary by the MDT and the U.S. Fish and Wildlife Service (USFWS) primarily because of an exceedance in the allowable "take" of grizzly bears over the last 10-year period along US 93 and regulatory updates that affect bull trout critical habitat designation in the corridor. Additionally, the following regulatory actions have occurred, and since the last corridor BA was prepared:

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- Wolverine was listed as a proposed species.
- Meltwater Lednian Stonefly was listed as a proposed species.

Where applicable, language from previous BAs and Biological Opinions prepared by the USFWS was inserted into this document or referenced by document and page number to maintain consistency between documents. Updates to the project description, Action Area, environmental baseline, individual species accounts, and proposed mitigation are all provided within this document. While the Action Area as defined later in this report applies only to the last remaining segment that has yet to be constructed (Ninepipes/Ronan), this BA provides updates for the entire Evaro to Polson corridor with respect to threatened and endangered (T&E) species and how the environmental baseline has changed with reconstruction of US 93 over the last 10 years.

1.1 FEDERAL NEXUS

Section 7 of the ESA requires that, through consultation (or conferencing for proposed species) with the USFWS and/or the National Marine Fisheries Service (NMFS), federal actions do not jeopardize the continued existence of any threatened, endangered, or proposed species or result in the destruction or adverse modification of critical habitat. As was the case with all completed

reconstruction projects in the study corridor, all remaining segments will be constructed in part with federal funds. Additionally, federal permitting through Section 404 of the Clean Water Act will be required for the remaining project segments.

1.2 PROJECT DESCRIPTION

The Montana Department of Transportation (MDT) and the Federal Highway Administration (FHWA), in cooperation with the Confederated Salish and Kootenai Tribes (CSKT), are proposing to reconstruct approximately 11.2 miles of US 93 in Lake County, Montana, which is referred to as the US 93 Ninepipe/Ronan Improvement Project. The corridor lies within the Flathead Indian Reservation and begins at Red Horn Road/Dublin Gulch Road (reference post [RP] 37.1) and extends north to Baptiste Road/Spring Creek Road (RP 48.3). The purpose of the project is to improve level of service (LOS), mobility, traffic flow, system linkage and safety on the transportation system [FHWA, 2008]. This highway segment has been divided into four primary projects with the potential for more splits to occur in the future. Table 1-1 lists the proposed project names, locations, lengths, and the proposed year of construction.

Table 1-1. Proposed Montana Department of Transportation Projects on US 93 Between Evaro and Polson

Project Name	Year of Proposed Constructed	Location (RP)	Total Length (Miles)
US 93 N–Post Creek Hill	2018+	37.1 to 40.4	2.9
Remainder of Ninepipe/Ronan corridor (Projects named in future)	2020+	40.4 to 44.6	4.6
Ronan - Urban	2018+	44.6 to 47.2	2.6
Ronan - North	2018	47.2 to 48.3	1.1

The Ninepipe/Ronan segment of US93 was previously part of a larger reconstruction project that extended from Evaro (RP 6.5) to Polson (RP 62.8). The Evaro to Polson corridor previously had an Environmental Impact Statement prepared for it [FHWA, 1996] and underwent formal consultation pursuant to Section 7 of the ESA in 2001. Between 2004 and 2010, ten individual reconstruction projects were completed in the Evaro to Polson corridor. Table 1-2 lists each project, the locations and lengths of each, and the year of construction.

The 11.2-mile portion of the Evaro/Polson corridor in the Ninepipe area was excluded from the original EIS. A Supplemental Environmental Impact Statement (SEIS) was prepared for Ninepipe/Ronan Improvement Project and released in 2008. As part of that analysis, the USFWS prepared a Biological Opinion in 2005. A full account of past consultation is provided in the following sections.

Table 1-2. Completed Montana Department of Transportation Projects on US 93 Between Evaro and Polson Through 2016

Project Name	Year Constructed	Location (RP)	Total Length (Miles)
US 93-Minesinger Trail to MT 35	2005-2006	56.0 to 58.1	2.1
Mud Creek Structures	2006–2007	50.7 to 51.1	0.4
US 93-Spring Creek Rd - Minesinger Trail	2007–2009	48.3 to 56.0	7.7
US 93-Medicine Tree-Vic Red Horn Rd	2006–2007	31.4 to 36.8	5.4
US 93-South of Ravalli - Medicine Tree	2006–2007	26.7 to 31.4	4.7
US 93-Vic White Coyote Rd - S Ravalli	2006–2007	20.0 to 26.7	6.7
US 93-N Arlee-Vic White Coyote Rd	2004–2005	18.5 to 20.0	1.5
US 93-McClure Rd-N Arlee Couplet	2008–2009	12.8 to 18.5	5.7
US 93-Evaro - McClure Road	2008–2010	6.4 to 12.8	6.4

Figure 1-1 shows the entire Evaro to Polson corridor with each past and proposed project segment highlighted for reference purposes. Figure 1-2 provides a more detailed look at the Ninepipe/Ronan corridor that is still to be constructed.

1.2.1 Project Area and Setting

Much of the Flathead Indian Reservation is a rural landscape containing diverse ecosystems that are used by humans for agriculture, recreation, and cultural purposes while also providing high-quality habitat features for a wide variety of fish and wildlife species. The Ninepipe area is within the Mission Valley and is bounded generally by the Crow Creek riparian corridor on the north, the Post Creek riparian corridor on the south, the town of Charlo on the west, and the Mission Mountains on the east. Within this Ninepipe area, the proposed project bisects a large, high-density glacial pothole wetlands complex that serves as key habitat for terrestrial wildlife, breeding and migratory birds, aquatic species of fish and wildlife, herpetiles, grassland plant species, and plants adapted to wetland and riparian conditions. At the center of this highly sensitive ecosystem is the Ninepipe National Wildlife Refuge, which includes the 676-hectare Ninepipe Reservoir. This area provides important habitat linkages to the Mission Mountain Tribal Wilderness, the Flathead River corridor, the National Bison Range, and other lands protected by tribal, state, and federal entities, as well as by private organizations. These protected lands contribute to the value of this area and the abundance of wildlife using it [Herrera Environmental Consultants, 2005].

1.2.2 Action Area

For the purposes of this corridor BA, the USFWS has recommended that the Action Area be defined as those areas potentially affected by construction of the four remaining project segments in the Ninepipes/Ronan corridor [McGrath, 2015]. The Action Area includes all areas that could be affected by the proposed projects and is not limited to the actual work area or project footprint. Noise and disturbance from construction activities have the potential to extend beyond the construction limits.

Temporary, project-induced sediment could potentially extend 800 meters (0.50 mile) downstream from the construction limits at Ashley, Post, Crow, and Spring Creek. Sedimentation might also occur in Ninepipe Reservoir and the many glaciated potholes bisected by the roadway. Construction-related noise impacts have the potential to extend 1.6 km (1 mile) from the roadway in all directions. The locations of the construction contractors' staging areas, gravel pits, gravel stockpiles, and batch plants are unknown. These sites are generally located as close as possible to the actual project. Additional ESA consultation may be required once gravel pits are located and before construction begins to comply with the ESA and CWA 404 permitting.

In summary, the Action Area associated with the Post Creek Hill, Ninepipe, Ronan Urban and Ronan North project segments is defined as the following:

- For noise: 1.6 km (1 mile) in all cardinal directions from the project footprint.
- For sediment impacts: 800 meters (½ mile) downstream from the proposed work at Ashley, Post, Crow, and Spring Creeks.

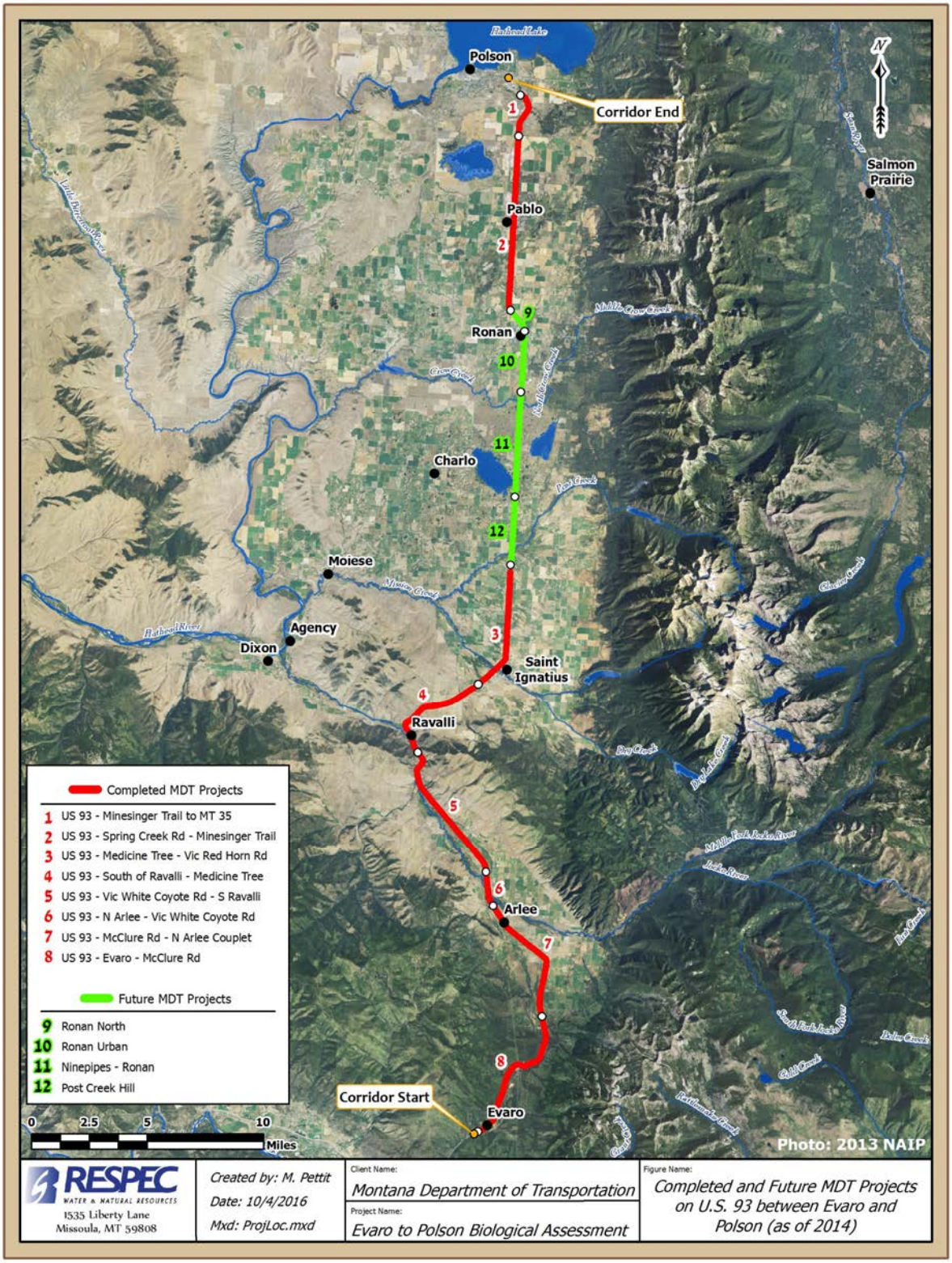


Figure 1-1. Completed and Future Montana Department of Transportation Projects on US 93 Between Evaro and Polson.

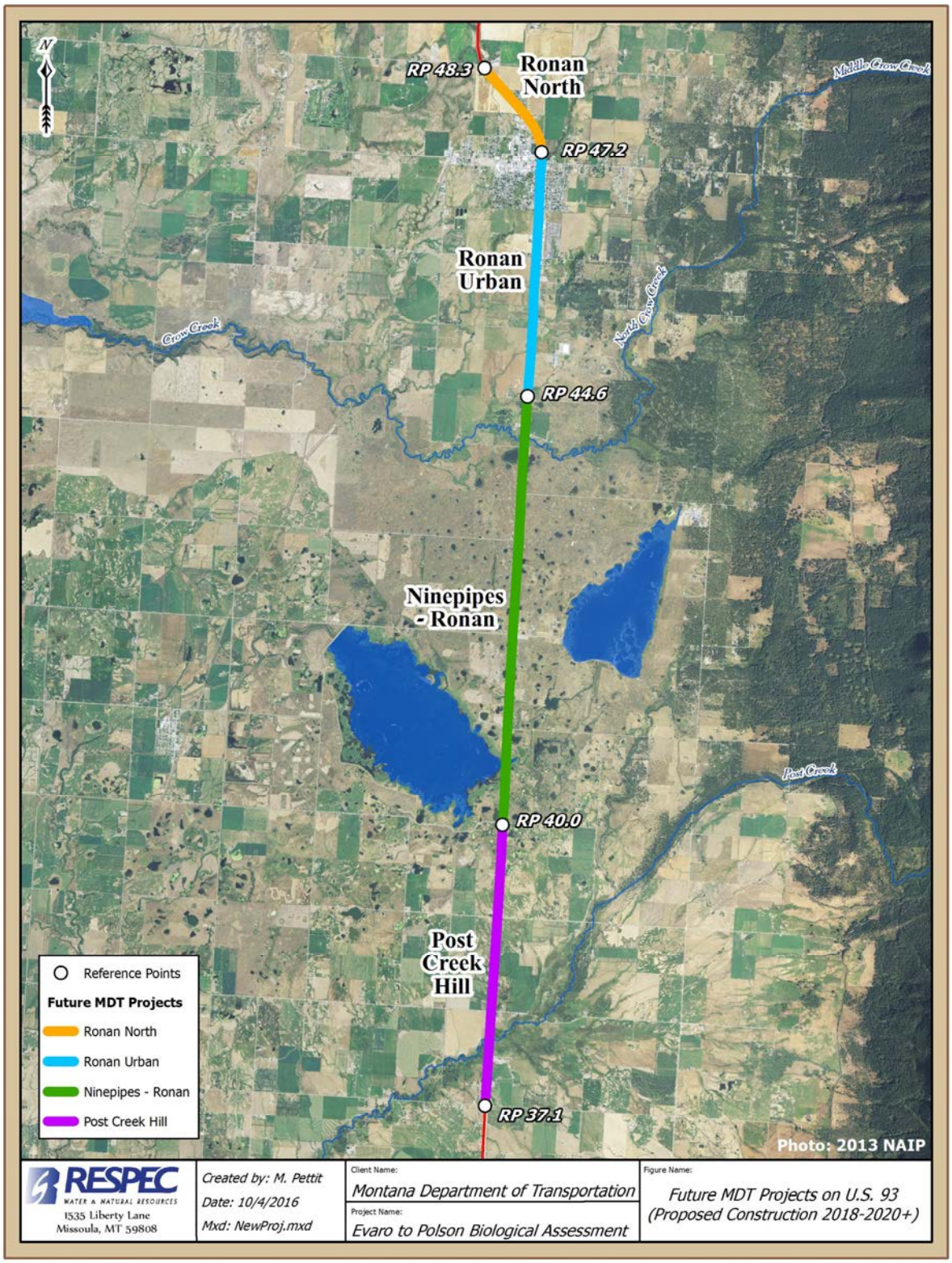


Figure 1-2. Future Montana Department of Transportation Projects on US 93 (Proposed Construction 2018–2020+).

1.2.2 Proposed Action

The US 93 Ninepipe/Ronan project corridor has been divided into rural and urban portions. The rural section has been further divided into two segments: the Post Creek Hill segment and the Ninepipe segment. The Post Creek Hill segment extends from Red Horn Road/Dublin Gulch Road on the south to a point approximately 2,000 feet north of Olson Road/ Gunlock Road. The Ninepipe segment extends from the northern end of the Post Creek Hill segment to Brook lane south of Ronan. The urban portion, referred to as Ronan - Urban, extends from Brook Lane northerly through Ronan to the Baptiste Road/Spring Creek Road intersection. Each of these segments has several alternative designs that have been proposed and are currently being analyzed. This BA is based on the preliminary preferred alternative that includes the Rural 10 Alternative for the rural portion and the Ronan 4 Alternative for the urban portion [Herrera Environmental Consultants, 2005].

1.2.2.1 Rural Segments

The rural portion of the preliminary preferred alternative would include reconstructing the existing roadway. The reconstruction would provide for curvilinear horizontal alignment roughly following the existing roadway to minimize impacts to adjacent lands. Roadway shoulders would be constructed sufficiently wide to accommodate bicycles and pedestrians. The design speed would be 100 kilometers per hour (km/hr) (62.0 miles per hour [MPH]). Left-turn lanes would be constructed at all public road intersections. The vertical alignment would be revised to accommodate wildlife crossing structures (including single- and multiple-span bridges and large culverts) at Post Creek, Ninepipe Reservoir, two Kettle Ponds, and Crow Creek, with additional structures at intermediate locations throughout the project length. At the wildlife crossing locations, these bridges and large culverts would provide a minimum vertical clearance of 3 meters (10 ft). Where stormwater will discharge to sensitive waters, such as Post Creek, treatment facilities would be constructed [Herrera Environmental Consultants, 2005].

The rural portion of this proposed project would be composed of a two-lane roadway with some sections of auxiliary lanes and a four-lane divided roadway as described below:

- A 0.8-km (0.5-mile) two-way, left-turn lane extending from Dublin Gulch Road/Red Horn Road (RP 37.1) northward to a business entrance driveway on the east side of US 93 at RP 37.5.
- A 2.9-km (1.8-mile) northbound-passing lane from West Post Creek Road/East Post Creek Road (RP 38.2) to the top of Post Creek Hill (RP 40.0).
- A 1.9-km (1.2-mile) southbound-passing lane from the top of Post Creek Hill (RP 40.0) to Eagle Pass Trail (RP 41.2).
- A 1.5-km (0.9-mile) section of four-lane divided roadway from Innovation Lane (RP 45.1) to the south Ronan city limits (RP 46.0).

The rural portion of the preliminary preferred alternative would represent a combination of the following two typical roadway cross sections:

- The two-lane roadway would be undivided with one travel lane in each direction. Each lane would be 3.6 meters (12 ft) wide with 2.4-meter (8-ft) shoulders, and the typical pavement width would be 12 meters (40 ft). Where auxiliary lanes would be provided, turning lanes would be 4.2 meters (14 ft) wide. The minimum preferred right-of-way width would be 49 meters (160 ft); however, narrower widths have been used at selected sensitive locations to keep the new roadway within the existing right-of-way to minimize impacts. Also considered in the preliminary preferred alternative is a variation of the two-lane roadway that would include one 3.6-meter (12-ft) passing lane. Where the passing lane would be added, the minimum preferred right-of-way width would increase to 55 meters (180 ft), with some narrower areas at selected sensitive locations to keep the new roadway within the existing right-of-way.
- The four-lane divided roadway would include two travel lanes in each direction. Each lane would be 3.6 meters (12 ft), depressed center median, 2.4-meter (8-ft) outside shoulders, and 1.2-meter (4-ft) inside shoulders. At intersections where left-turn lanes would be provided, the turning lane would be located within the center median area. The typical cross-section width would be 33.6 meters (110 ft) and the minimum right-of-way width would be 67 meters (220 ft) [Herrera Environmental Consultants, 2005].

The Post Creek Hill project segment will include a 3-meter (10-ft) wide pedestrian path on the east side of the highway. The shared-use path will butt up to the north bound travel lane across the new Post Creek bridge and there will be jersey barrier separating traffic from pedestrians. North and south of the bridge the path will be separated from the travel lanes and will be located on the fill slopes of the new roadway.

1.2.2.1.1 Proposed Wildlife Crossings. The preliminary preferred alternative for this project would also include replacement and upgrade of the existing culverts and bridges. In addition, wildlife crossing structures are planned at several locations in the rural portion of the project. The vertical alignment of the roadway would be revised to accommodate these structures (large culverts or bridges of varying lengths) and provide a minimum vertical clearance of 2.4 meters (8 feet). These wildlife crossing structures are currently proposed for five locations; Post Creek, Ninepipe Reservoir, two large kettle ponds, and Crow Creek, with additional smaller structures crossing waterways and riparian areas at intermediate locations throughout the project length. Wing fencing is proposed at all wildlife crossing structures and would vary in length depending on terrain, proximity to major county road and private road intersections, and other logical termination points. Crossings designed for large mammals include a minimum of 137-meters (150-yards) of wing fencing. A description of the structures proposed at these five primary locations to facilitate wildlife crossing is provided below [Herrera Environmental Consultants, 2005]:

- **Post Creek** (approximately RP 37.7)
  - — One 152-meter (500-ft) multiple-span bridge. The bridge will have a maximum clearance of 4.3 meters (14 ft) where it crosses Post Creek and a minimum clearance of 2.4 meters (8 ft) at the south end of the bridge.
  - — Two to three herpetile crossings are being considered and in design. Dimensions are not known at this time.

- **Ninepipe Reservoir** (approximately RP 40.8)
  - — One 4-meter × 8-meter / 12-ft x 22-ft culvert
  - — Two 3-meter × 4-meter / 10-ft x 12-ft culverts
  - — One 200-meter (660-ft) multiple-span bridge with minimum clearance of 3 to 4 meters (10-13 ft)

- **Kettle Pond 1** (approximately RP 41.7)
  - — Two 18-meter (59-ft) single-span bridges with minimum clearance of 3 to 4 meters (10-13 ft)
  - — Two 1.2-meter × 1.8-meter / 4-ft x 6-ft culverts

- **Kettle Pond 2** (approximately RP 42.5)
  - — Two 18-meter (59-ft) single-span bridges with minimum clearance of 3 to 4 meters (10-13 ft)
  - — Two 1.2-meter × 1.8-meter / 4-ft x 6-ft culverts

- **Crow Creek** (approximately RP 44.2)
  - — One 37-meter (121-ft) multiple-span bridge with minimum clearance of 3 to 4 meters (10-13 ft)
  - — One 46-meter (150-ft) multiple-span bridge with minimum clearance of 3 to 4 meters (10-13 ft)

1.2.2.1.2 Post Creek Bridge. Because of the importance of the Post Creek drainage to the species being consulted on for this project—threatened Bull Trout (*Salvelinus confluentus*) and threatened Grizzly Bears (*Ursus arctos horribilis*)—the approximate construction sequence for removing and replacing the bridge at the Post Creek crossing is described in the following sections.

The Post Creek channel is approximately 10-meters (33-ft) wide in the vicinity of US 93 and is presently conveyed under US 93 via a 15.5-meter (50-ft) long, 9.5-meter (31-ft) wide, two-span bridge. The center pier occurs within the Post Creek channel. The channel under the bridge has been narrowed and stabilized with large riprap. The new bridge, proposed to be a multiple-span structure 152 meters (500 feet) long, would not include a pier within the Post Creek channel. This

much longer bridge would result in less channel constriction and allow the stream more interaction with its floodplain [Herrera Environmental Consultants, 2005].

1.2.2.1.3 Post Creek Bridge Construction. To minimize wetland impacts both east and west of the highway, the new Post Creek bridge alignment will be constructed on the present alignment. During construction, a 7-meter (24-ft) wide detour road will be located on the east (upstream) side of the highway to carry traffic during construction of the new bridge. Temporary detour and/or work bridges will span the entire Post Creek channel and will be built on either temporary piles or spread footings. The temporary detour would be constructed prior to demolition of the existing bridge and current roadway. Construction of the new bridge includes the following:

- Grading and construction practices that unnecessarily disturb natural features, promote erosion, and require extensive revegetation would be avoided or minimized.
- The new Post Creek bridge piers would be located outside the ordinary high-water mark for Post Creek, with the nearest piers located approximately 12 meters (40 feet) north and south of the creek banks.
- The newly constructed lanes would be graded to prepare for paving (arriving at the finished elevation and shape of roadway).
- Intersections with existing roads that would be affected by the new traffic lanes approaching the bridge would be reconfigured to meet MDT standards.
- The full length of the new lanes approaching the bridge would be paved, and any new driveway connections and intersections would be created. Centerlines and fog lines would be painted and signs would be installed.
- Traffic would be relocated to the new bridge. Traffic may be routed to the new bridge before paving the roadway approaches if traffic flow would not be affected [Herrera Environmental Consultants, 2005].

1.2.2.1.4 Post Creek Bridge Removal.

Removing the existing Post Creek bridge includes the following:

- Instream work required to remove the bridge abutments and pier would be limited to the time period identified by the tribal fisheries program permitting process. Preliminarily, the tribal fisheries program has recommended a July 1 through August 31 instream work window [Barfoot, 2014].
- The existing bridge would be removed after traffic is switched to the temporary detour east of the highway.
- Coffer dams, or similar structures, may be constructed around areas of abutment removal to control transport of sediment.

- The MDT is required to cut off or remove substructures to a depth of 305 millimeters (1 foot) below the stream bed and the removal areas are to be shaped and contoured to blend with the surrounding terrain.

1.2.2.2 Urban Segment

The Ronan - Urban and Ronan – North projects will completely reconstruct the northern 3.7 miles of the US 93 Ninepipe/Ronan corridor. This existing road segment is narrow, lacks shoulders, is periodically congested, and is expected to deteriorate in the future. The Ronan projects begin south of Ronan (south of the intersection of US 93 and Brooke Lane). Reconstruction extends north through the city of Ronan past the intersection of US 93 and Spring Creek Road/Baptiste Road to connect with the rebuilt four-lane, divided road.

The proposed project follows the present alignment of US 93 while widening to a two-lane roadway with a continuous two-way, left-turn lane (TWLTL) developed south of Innovation Lane (south rural section). Closer to the Ronan city limits, the project transitions to a five-lane roadway with four through lanes and a TWLTL. For the urban portion of the project, US 93 will split into a couplet with a two-lane, one-way northbound roadway on existing US 93 and a two-lane, one-way southbound roadway on 1st Avenue SW. Within the city limits, the project will install sidewalks on both sides of the one-way couplets and connections to the east-west streets (where right-of-way [ROW] is available). The project will also construct a separated, shared-use path along the entire length of reconstruction. Traffic signal control will be provided on the one-way couplet intersections with Eisenhower, Buchanan, and Round Butte Road (Secondary Route 211) and at the intersection with the old US 93 (3rd Avenue NW). North of old US 93, the project will transition into a four-lane divided highway with turn lanes provided at the intersection of US 93 and Spring Creek Road/Baptiste Road.

The rural and urban sections have varying typical sections and widths but all provide two, 3.6-meter (12-foot) asphalt travel lanes with shoulders. Rural sections will also include a separated, 3-meter (10-foot) asphalt, shared-use (bicycle/pedestrian) trail. Select urban locations will include concrete sidewalks.

The Ronan - Urban project's major hydraulics features consist of standard road crossing culverts, four irrigation crossings, and a major stream crossing, Spring Creek. The SEIS proposed that the existing Spring Creek culvert system would be replaced with an open channel and culverts to convey the stream under the two, one-way couplets and the city-block between. Preliminary analysis now recommends replacing the existing culvert system with one new culvert located in public ROW.

1.2.3 Proposed Mitigation and Conservation Measures

The preliminary design plans for the four projects in the Action Area incorporate various measures to minimize adverse impacts to T&E species and their habitat, while additional

measures will actually improve conditions for T&E species over the existing condition. The following measures have been or will be incorporated into design plans for the four proposed projects in the Action Area. Construction conservation measures to be implemented during construction to further minimize impacts are:

- To provide safe passage for grizzly bears and other wildlife between suitable habitats on either side of the highway, wildlife crossing structures are proposed at Post Creek, Crow Creek, and on the Ninepipe National Wildlife Refuge. Guide fencing to route bears toward wildlife crossings is proposed at each crossing and where practical, will extend a minimum of 137 meters (150 yards) on each side of the proposed crossings.
- The proposed project would reduce effects on fisheries resources and grizzly bear habitats by steepening fill slopes from 6:1 (Horizontal:Vertical) to 4:1; this would be incorporated into all rural alternatives where it is justified to do so. Fill slopes for the approaches to bridge structures have also been steepened to 2:1 because these slopes would already contain protective approach guardrails necessary to provide a transition to the barrier rail on the bridges. These steeper slopes reduce the width of the roadway footprint and, consequently, reduce impacts to floodplains, wetlands, and federal and state managed lands.
- To the greatest extent possible, the MDT has elected to maintain US 93 on its current alignment to minimize impacts to wetlands, riparian areas, and other important wildlife habitat. At Post Creek, the original proposal to construct the new bridge and roadway to the west of the current alignment has been changed to avoid impacts to important forested wetlands and grizzly bear habitat in the Post Creek riparian corridor. The new roadway and bridge is now proposed on the current alignment. Better wetland delineation accuracy in combination with staying on the current alignment has reduced wetland impacts by 4.15 acres.

Through the long-term operation and maintenance of US 93 and to address exceedance of take of grizzly bears under the 2005 Biological Opinion, additional mitigation measures outside the Action Area are being proposed by the MDT to further minimize adverse impacts to T&E species; specifically, grizzly bears. Because of ongoing issues related to grizzly bear mortalities resulting from vehicle collisions on US 93 north of St. Ignatius in the previously constructed segment, the MDT is proposing to extend the existing wildlife guide fencing at each of the existing wildlife crossing features in this area. Once completed, wildlife guide fence will be continuous from south of the Pistol Creek 1 crossing to north of Mission Creek, then continuous again from south of the Post Creek 4 crossing to north of the Post Creek 1 crossing. Because several private drives and roads are in the area, the MDT would need to incorporate power gates or new electrified mat/asphalt technology at each road approach to prevent bears and other wildlife from entering the fenced ROW in these areas.

1.2.4 Conservation Measures for Protecting Bull Trout in Post Creek

Conservation measures and best management practices to be implemented during removal of the existing bridge and construction of the new bridge include the following:

1. Impact pile driving for the construction of temporary and permanent facilities may occur between July 1 and August 31. This includes dry land and in-water impact pile driving.
2. Should piles be driven outside of the above work window:
    a. Limit the periods of driving pile to no more than 10 hours/day, except in rare circumstances, when safety issues require completion of work begun that day. Do not drive in excess of 12 hours in a day without written approval from the Project Manager.
    b. Conduct hydroacoustic monitoring. Through hydroacoustic monitoring, should it be determined that the physical harm thresholds of the cumulative sound exposure level (SEL) of 187 dB (re: 1 µPa) have been attained or exceeded, impact pile driving must be stopped for the day, with impact pile driving permitted to commence the next morning. In combination with hydroacoustic monitoring, use one of the following measures:
        i. Use a vibratory hammer to drive piles to such a point when an impact hammer will be required to drive the pile to the point of completion OR;
        ii. Use a "soft start" or "ramp up" pile driving (e.g., driving does not begin at 100% energy) to encourage fish to vacate the surrounding area and use the National Marine Fisheries Service Calculator Tool to determine how many pile strikes can occur during a day, based on pile type and size, prior to reaching threshold in 2) b. above. Once the number of strikes has been attained, impact pile driving must be stopped for the day. If driving pile with an impact hammer over consecutive days outside the work windows in 1) above, do not drive piling between the hours of 9:00 PM and 6:00 AM OR;.
        iii. Use MDT-approved noise reduction methods, such as those offered in Leslie and Schwertner (2013) (e.g., bubble curtain, cofferdams).
3. Monitor all dewatering activities visually to ensure bull trout are not trapped. In the unlikely event a live bull trout is found within a dewatering area, immediately return it to the river.
4. No construction equipment is allowed to operate within the active channel unless permitted to do so.
5. To the maximum extent practicable, disassemble and remove the existing bridge without pieces being allowed to fall into the river. If debris or portions of the existing bridge enter the river during demolition, within five (5) days completely remove them from the river without dragging the material along the streambed.
6. Any blasting required during demolition will be contained to the maximum extent practicable using some type of containment shielding device to attenuate the blast's pressure wave within the water and to prevent debris from entering the river. Meet all

applicable requirements contained within MDT Standard Specifications Section 204 – Blasting.

7. Upon locating dead or injured bull trout, notify the MDT Project Manager and contact the USFWS Field Office at (406) 449-5225 within 24 hours. Record information relative to the date, time, and location of dead or injured bull trout when/if found. Include any activities that were occurring at the location and time of injury and/or death of each fish and provide this information to the USFWS.
8. Conduct project-related activities outside of construction limits in a manner which will not adversely affect species and/or designated critical habitat listed under the Endangered Species Act.

Water Quality

1. Stormwater facilities will be designed such that direct discharges to Post Creek are eliminated.
2. Ensure best management practices (BMPs) are applied to this project, including, but not limited to:
    a. installing and maintaining appropriate structural BMPs to prevent erosion and sediment transport from entering state waters;
    b. reseeding and revegetating all disturbed areas with desirable vegetation;
    c. stabilizing disturbed channel banks using appropriate structural BMPs; and
    d. conducting work to minimize disturbance to riparian vegetation.
3. Collect and dispose of all waste fuels, lubricating fluids, herbicides, and other chemicals in accordance with all applicable laws, rules, and regulations to ensure no adverse environmental impacts will occur.
4. During active construction periods, inspect equipment daily to ensure hydraulic, fuel, and lubrication systems are in good condition and free of leaks to prevent these materials from entering any water body.
5. Locate vehicle servicing and refueling areas, fuel storage areas, and construction staging and materials storage areas to ensure that spilled fluids or stored materials do not enter any water body.
6. Keep in-water work within the river channel to the minimum amount necessary. This includes, but is not limited to, construction and removal of any temporary support structures that may be necessary. In-water construction work shall be completed in the shortest amount of time practicable.
7. Do not operate construction equipment within the active channel of any water body unless allowed by temporary facilities permits and approved by the MDT Project Manager. Schedule construction activities to ensure as much of the work as practicable is completed during periods of low water levels.

1.2.5 Conservation Measures for the Protection of Grizzly Bears

During construction, the following conservation measures would be implemented to minimize project effects on grizzly bears:

- Promptly clean up any project-related spills, litter, garbage, and debris.
- Store all food, food related items, petroleum products, antifreeze, garbage, and personal hygiene items inside a closed, hard-sided vehicle or commercially manufactured bear resistant containers.
- Remove garbage from the project site daily and dispose of it in accordance with all applicable regulations.
- Notify the Project Manager of any animal carcasses found in the area.
- Notify the Project Manager of any bears observed in the vicinity of the project.
- To allow bears the opportunity to move east and west along the Post Creek riparian zone during construction, construction activities within 400 meters (¼ mile) of the Post Creek bridge will only occur between 6 a.m. and 9 p.m. between April 1 and June 30.
- In the vicinity of Post Creek, locate construction staging areas, field offices, and sleeping quarters according to the following restrictions:
  - On the west side of the corridor, locate these facilities south of Dublin Gulch Road/Red Horn Road or north of West Post Creek Road/East Post Creek Road.
  - On the east side of the corridor, locate these facilities south of Dublin Gulch Road/Red Horn Road [Herrera Environmental Consultants, 2005].

1.3 CONSULTATION HISTORY

The MDT began preparing an EIS for the Evaro to Polson Corridor in the early 1990s, which resulted in the original EIS being released in 1996. In 1995, Morrison-Maierle Environmental Corp prepared the original BA for the corridor, which was used in preparing the EIS but was never submitted to the USFWS for consultation purposes. The following is a timeline that traces the consultation history for this project beginning with earliest documentation and consultation up to present day:

October 11, 1995. A BA for the US 93 Evaro to Polson corridor was prepared by Morrison-Maierle Environmental Corp, Helena, Montana. (This document was never submitted to the USFWS).

May 9, 2001. The FHWA submitted an updated BA to the USFWS and requested formal consultation. This BA was prepared by Herrera Environmental Consultants on May 3, 2001, for Skillings Connolly, Inc. and the MDT.

May 17, 2001. The USFWS requested additional project information from the MDT that was necessary to fully assess project-related impacts to listed species. The supplemental BA information was received by the USFWS' Montana Field Office on August 31, 2001.

October 19, 2001. The USFWS issued a Biological Opinion for effects to bull trout, grizzly bear, Canada lynx, and gray wolf. A "No Jeopardy" decision was made for all species. Grizzly bear incidental take was set at two bears in any 10-year period. Lynx incidental take was set at one lynx in any 10-year period. Gray wolf incidental take was set at one wolf in any 10-year period.

October 22, 2003. The FHWA submitted an analysis of effects on proposed bull trout critical habitat to the USFWS with a request for formal conferencing. The USFWS issued a conference opinion on March 5, 2004, with an opinion of "not likely to destroy or adversely modify proposed bull trout critical habitat."

January 11, 2005. A BA that addressed the bull trout and grizzly bear was prepared by Herrera Environmental Consultants (on behalf of the MDT) for the Ninepipe/Ronan portion of the corridor and submitted to the USFWS for formal consultation.

August 29, 2005. The USFWS issued a Biological Opinion for effects to bull trout and grizzly bears. The opinion determined that the project was "not likely to jeopardize the Columbia River Basin bull trout distinct population segment (DPS)" and "not likely to jeopardize the continued existence of the Northern Continental Divide Ecosystem NCDE grizzly bear population." As was the case in 2001, this Biological Opinion stated that grizzly bear incidental take would be set at two bears in any 10-year period.

Fall 2005. A BA addressing bull trout critical habitat (designated in September 2005) was prepared by Herrera Environmental Consultants (on behalf of the MDT) for the Ninepipe/ Ronan portion of the corridor and submitted to the USFWS for formal consultation.

June 27, 2006. The USFWS issued a Biological Opinion for effects to bull trout critical habitat. The opinion determined that the project was "not likely to destroy or adversely modify designated bull trout critical habitat."

September 21, 2012. The MDT notified the USFWS via email that a total of three grizzly bears had been killed on US 93 in the Evaro to Polson corridor within a 10-year period (2003–2012). This level of take exceeded the allowable take (two bears) as permitted in the 2001 and 2005 Biological Opinions prepared by the USFWS. Formal consultation was reinitiated with the USFWS at that time and is ongoing with preparation of this revised BA.

2.0 ENVIRONMENTAL BASELINE

2.1 LAND USE AND VEGETATION COVER TYPES

The south end of Evaro to Polson corridor begins in the Jocko Valley at Evaro and extends northward through coniferous forest and agricultural land to Arlee, Montana. From the community of Arlee, the project corridor crosses the Jocko River and a low open bench in the northern Jocko Valley. North of the Jocko Valley, the project corridor enters the narrow, steep-sided Ravalli Canyon where the existing highway and a railroad closely parallel the Jocko River in a constricted passage excavated into the canyon walls. North of Ravalli, the project corridor climbs steeply to a low pass in grassy, dry terrain and enters the Mission Valley [Morrison-Maierle Environmental Corp, 1995].

Most of the land in the Mission Valley is agricultural, traversed by wooded riparian areas associated with Mission, Sabine, Post, Crow, and Mud Creeks and other perennial streams. North of the Post Creek Hill, the project corridor enters the Ninepipe National Wildlife Refuge, which is an area of glacial potholes and wetland/grassland complexes. From the Ninepipe area, the alignment passes through predominantly agricultural land to the outskirts of Polson [Morrison-Maierle Environmental Corp, 1995].

Figure 2-1 illustrates the major land use and vegetative cover types for the entire Evaro to Polson corridor. For a more detailed discussion of upland and wetland communities occurring within the Ninepipes/Ronan Action Area, refer to pages 21–24 of the 2005 BA for this project [Herrera Environmental Consultants, 2005].

2.2 AQUATIC RESOURCES

The Evaro to Polson corridor is located in the greater Clark Fork River drainage, with a majority of the corridor occurring in the Lower Flathead River Basin [Herrera Environmental Consultants, 2001]. The Polson area lies within the Upper Flathead River Basin. The Flathead River flows from Flathead Lake, a natural lake encompassing 495 square kilometers (191 square miles), for approximately 6.5 km (4 miles) to the Kerr Dam [Herrera Environmental Consultants, 2001] now known as Seli'š Ksanka Qlispe'. US 93 crosses the Flathead River at the lake outlet on the north side of the community of Polson. This bridge crossing lies outside the Evaro/Polson study corridor. Seli'š Ksanka Qlispe' regulates flows in the Flathead River for 72 river miles downstream to its confluence with the Clark Fork River near the small community of Paradise, Montana [Herrera Environmental Consultants, 2001]. The US 93 corridor loosely parallels the lower Flathead River between river mile 29, where the river turns west, and river mile 72, at the Seli'š Ksanka Qlispe', at an average distance of 16 km (10 miles) to the east [Herrera Environmental Consultants, 2001]. For a detailed description of the drainage basin, refer to pages 37–43 of the 2001 BA prepared for the Evaro to Polson corridor [Herrera Environmental Consultants, 2001].

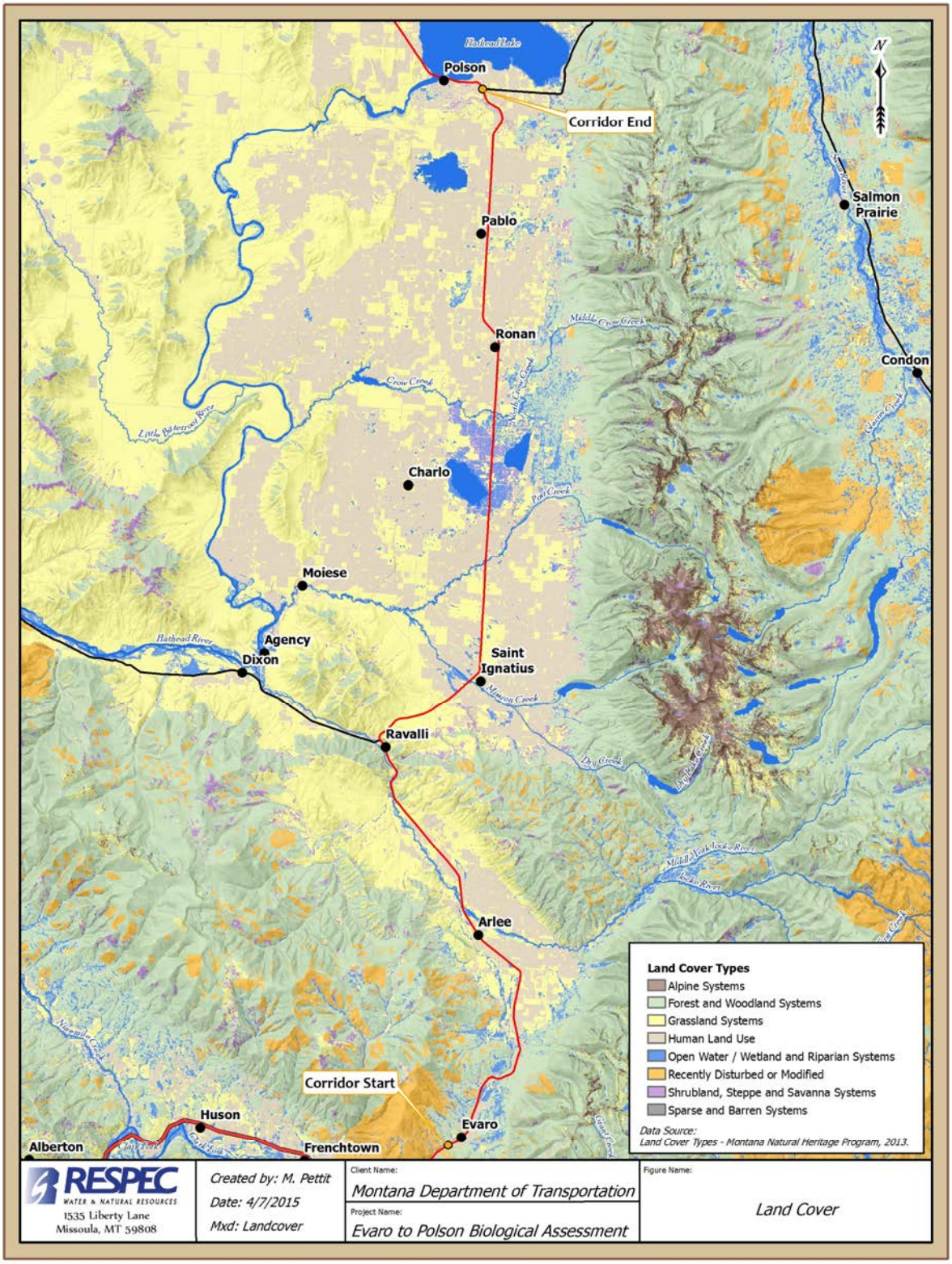


Figure 2-1. Land Cover Types in the Evaro to Polson Corridor.

The principal irrigation canal in the Evaro-Polson corridor is the Pablo feeder canal located at the base of the Mission Mountains [Herrera Environmental Consultants, 2001]. This canal runs north/south and bisects or is fed by nearly all of the streams flowing from the Mission Mountains. Major tributaries that drain to the Flathead River within the Evaro-Polson corridor (from south to north) include the Jocko River, Mission Creek, and Crow Creek [Herrera Environmental Consultants, 2001]. All of the major tributaries are impounded at their headwaters or at mid-valley, and canal diversion and irrigation returns intersect them throughout their drainage areas [Herrera Environmental Consultants, 2001]. Other perennial streams that cross underneath US 93 in the Evaro-Polson corridor include Finley, Jocko Spring, Copper, Frog, Schley, East Fork Finley, Agency, Sabine, Post, Ronan Spring, and Mud Creeks. Streams located in the Action Area for the Ninepipes/Ronan project include Ashley, Post, Crow, and Ronan Spring Creeks.

Post Creek represents the most significant fisheries resource in the Action Area and supports a variety of species including resident and migratory populations of northern pikeminnow (*Ptychocheilus oregonensis*), largescale sucker (*Catostomus macrocheilus*), longnose sucker (*Catostomus catostomus*), mountain whitefish (*Prosopium williamsoni*), brown trout (*Salmo trutta*), and rainbow trout (*Oncorhynchus mykiss*). Post Creek also supports a resident population of brook trout (*Salvelinus fontinalis*). In addition, the area provides seasonal nodal (for migratory juveniles and adults) habitat for bull trout (*Salvelinus confluentus*) and westslope cutthroat trout (*Oncorhynchus clarki lewisi*) [Barfoot, 2014]. Crow and Ronan Spring Creeks have similar species assemblages but do not provide habitat for bull or westslope cutthroat trout. Ninepipe Reservoir supports largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*), yellow perch (*Perca flavescens*), and rainbow trout. The fish species present in the Ninepipes/Ronan corridor is listed in Table 3 on page 27 of the 2005 BA for this project [Herrera Environmental Consultants, 2001].

2.3 WILDLIFE RESOURCES

As previously discussed, the US 93 corridor from Evaro to Poslon traverses a wide variety of wildlife habitat communities, including coniferous forest, agricultural lands, riparian areas, native grasslands, wetlands, and roadside habitats. These habitats support a wide variety of wildlife species, including big game species such as elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), black bear, mountain lion (*Puma concolor*), and grizzly bear; small mammals such as fox (*Vulpes vulpes*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), and skunk (*Mephitis mephitis*); a wide variety of song birds, raptors, waterfowl, shore birds, and game birds; and a variety of amphibians and reptiles, especially painted turtles (*Chrysemys picta*) in the Ninepipe pothole region. For a more detailed account of wildlife habitats in the Ninepipe/Ronan Action Area, refer to pages 23–25 of the 2005 BA for this project [Herrera Environmental Consultants, 2001].

The entire US 93 Evaro-Polson corridor lies in a semirural landscape except where it passes through the small urban communities of Arlee, Ravalli, St Ignatius, and Ronan. Habitat within the existing highway ROW is mostly low to moderate quality because of past and ongoing disturbance and its proximity to a heavily traveled roadway. Wildlife use of habitat within the ROW is likely limited to small mammals, some bird species, and temporarily by all types of wildlife as they move back and forth across the roadway between preferred habitats bisected by the road.

Within the Action Area, high levels of wildlife/vehicle mortality have been recorded, especially in the vicinity of the Ninepipe National Wildlife Refuge and the riparian areas associated with Post Creek and Crow Creek [Herrera Environmental Consultants, 2001]. In the Ninepipe area, small mammals, nongame birds, game birds, waterfowl, reptiles, and amphibians are frequently struck and killed by vehicles. Painted turtles are especially vulnerable as they attempt to move between pothole wetlands on both sides of the highway. At Post Creek, white-tailed deer are frequently struck by vehicles on US 93, while less abundant species such as black and grizzly bears have also been killed by vehicles in this area. The existing bridge over Post Creek is just long enough to span the active channel of the creek and does not provide dry land passage for wildlife under either end.

2.4 WILDLIFE CROSSINGS

Between 2006 and 2010, as part of the overall reconstruction of US 93 between Evaro and Polson, a total of 42 wildlife crossings of various types and dimensions have been constructed. The goal of these crossings is to help wildlife safely move between cross-highway habitats while at the same time improve habitat connectivity and improve public safety by minimizing animal/vehicle collisions. The sizes, types, and locations of each wildlife crossing were selected based on a number of factors, including position on the landscape, targeted wildlife species, adjacent land use, and constructability. Additionally, approximately 18 miles of wildlife guide fencing has been installed to help route animals to the wildlife crossing structures. Approximately 60 wildlife jumpouts have been installed to provide an escape route for animals "stuck" within the ROW between sections of fencing, and double cattle guards or wildlife guards/grates have been installed at numerous private and public access roads to prevent animals from accessing the roadway where breaks in the fence occur. These constructed crossings and associated features represent a significant change to the baseline conditions in the corridor, because none of these structures existed at the time the last BA was conducted for this corridor.

Figure 2-2 shows the location of all 42 wildlife crossings along with the future crossings that are proposed in the Action Area. This figure also identifies the existing wildlife crossings where grizzly bears have been documenting using the structures. A summary of all 42 crossings (plus two additional stockpasses) is provided in Appendix A and provides the locations by milepost, type of crossing, size of structure, and other related details.

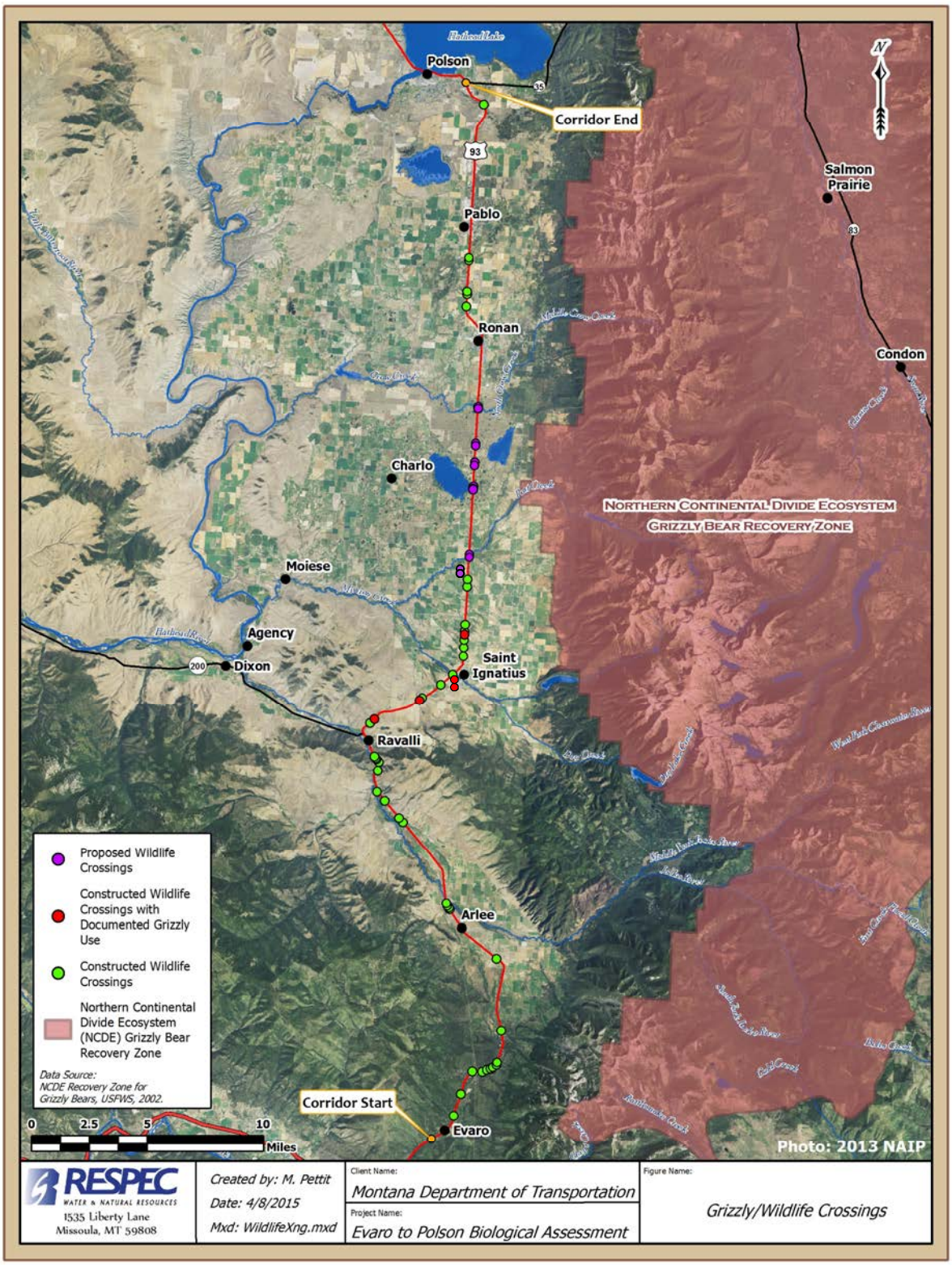


Figure 2-2. US 93 Wildlife Crossings in the Evaro to Polson Corridor.

The MDT, in cooperation with the Confederated Salish and Kootenai Tribes (CSKT), Western Transportation Institute, and Montana State University, has been monitoring wildlife usage at 29 of the constructed crossings in the corridor since 2009. Currently, over 50,000 wildlife uses have been recorded by over 30 species of wildlife [Peoples Way Partnership, 2015.].

With respect to T&E species, annual monitoring through 2013 has documented grizzly bear use at five crossings with a total of 29 crossings (Table 2-1). Additional crossings have been observed by tribal wildlife staff in the Ravalli Curves area [CSKT, 2014] but occurred before formal monitoring, the exact crossings that were used are unknown. Additional crossings may have occurred at one or more of the 13 crossings that were not monitored but these crossings were not intended for larger wildlife species.

Table 2-1. Documented Grizzly Bear Use of Wildlife Crossings on US 93 Between Evaro and Polson (2009–2016)

Year	Number of Documented Crossings	Location
2009	1	Post Creek 1
2010	3	unknown
2011	15	Pistol Creek 1 (n = 12) Post Creek 3 (n = 3)
2012	4	Ravalli Hill 2 (n = 1) Post Creek 3 (n = 3)
2013	5	Post Creek 3
2016	1	Post Creek 2

3.0 FEDERALLY PROTECTED SPECIES

Based on the USFWS list of threatened, endangered, and proposed species that may be present in Montana counties [USFWS, 2016]; correspondence with the CSKT and USFWS; and range/habitat descriptions found in technical literature, the following listed, proposed, and candidate species were considered with respect to this project:

- Canada Lynx (*Lynx canadensis*) and critical habitat: Threatened
- Grizzly Bear (*Ursus arctos horribilis*): Threatened
- Yellow-billed Cuckoo (*Coccyzus americanus*): Threatened
- Bull Trout (*Salvelinus confluentus*) and critical habitat: Threatened
- Spalding's Campion (*Silene spaldingii*): Threatened
- Water Howellia (*Howelliea aquatilis*): Threatened
- Wolverine (*Gulo gulo luscus*): Proposed
- Meltwater Lednian Stonefly (*Lednia tumana*): Proposed
- Whitebark Pine (*Pinus albicaulis*): Candidate

3.1 CANADA LYNX (*LYNX CANADENSIS*) AND DESIGNATED CRITICAL HABITAT

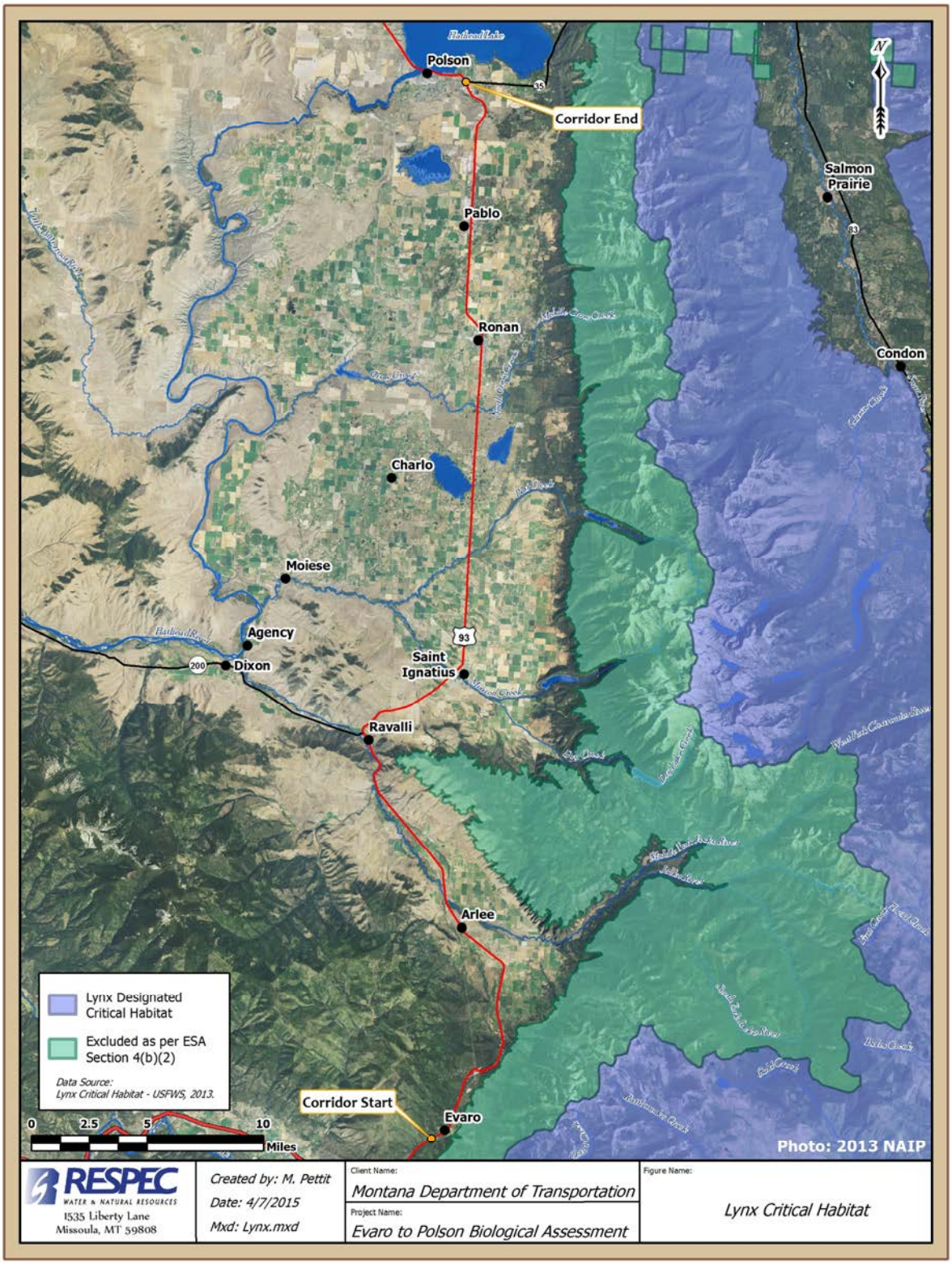
3.1.1 Status and Distribution

The Canada lynx was listed as a threatened species on March 24, 2000 [U.S. Department of the Interior, Fish and Wildlife Services, 2000]. The historic range for lynx extended from Alaska across much of Canada, with southern extensions into parts of the western United States, the Great Lakes states, and New England [Interagency Lynx Biology Team, 2013].

In Montana, numerous historic and current lynx records exist throughout Rocky Mountain conifer forest in the western part of the state [U.S. Department of the Interior, Fish and Wildlife Services, 2000]. Many records exist of lynx harvested in eastern Montana's Great Plains Region in the 1960s; however, the USFWS suspects these were dispersing transient animals associated with cyclic highs in northern lynx populations during the early 1960s. The USFWS concluded that a resident population of lynx is distributed throughout its historic range in Montana; however, available data are not sufficient to determine either population trend (increasing or decreasing) or estimates of population size [U.S. Department of the Interior, Fish and Wildlife Services, 2000].

On November 9, 2005, the USFWS proposed designation of critical habitat for the contiguous United States' distinct population segment (DPS) of the Canada lynx [70 Federal Register 68293].

Figure 3-1. **Designated Canada Lynx Critical Habitat in the Vicinity of US 93.**



On November 9, 2006, the final rule designating lynx critical habitat in the contiguous United States was released [71 Federal Register 66007]. Critical habitat was revised on February 25, 2009, (50 code of Federal Regulations Part 17). In total, approximately 39,000 square miles of habitat in Maine, Minnesota, Idaho, Montana, Washington, and Wyoming were included in the revised final rule [50 CFR Part 17]. The USFWS once again proposed to designate revised critical habitat for the U.S. DPS of the Canada lynx and revise the boundary of the DPS on September 26, 2013. The 2013 rule was finalized on September 12, 2014, and excluded formerly designated critical habitat on tribal lands. Under the current 2009 rule and the proposed 2013 rule, the US 93 corridor between Evaro and Polson does not traverse any designated critical habitat for Canada lynx. Under both rules, designated critical habitat occurs east of US 93 in higher elevation forest habitat in the Mission Mountain Range. Figure 3-1 shows the extent of designated critical habitat in the project area, with the proposed exclusion area on the Flathead Indian Reservation.

3.1.2 Life History and Habitat Requirements

Lynx typically occur in mesic coniferous boreal, subboreal, and western montane forests that are subject to cold, snowy winters and support a prey base of snowshoe hare (*Lepus americanus*) [Interagency Lynx Biology Team, 2013]. Lynx are most likely to persist in areas of deep snow, for which this species is highly adapted [USFWS, 2000]. Snow crusting or compaction may reduce the competitive advantage that lynx have in soft snow because of their long legs and low foot loadings.

Most of the lynx occurrences in the Northern Rocky Mountains/Cascades Region are in the 1,500–2,000 meter (4,920–6,560 foot) elevation class [USFWS, 2000]. In the western United States, lynx habitat may consist of lodgepole pine (*Pinus contorta*), subalpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmanii*), and aspen (*Populus tremuloides*) habitat types. Where interspersed with subalpine forests, cool, moist Douglas-fir, grand fir, and western larch forests also provide habitat for lynx. In extreme northwestern Montana and northern Idaho, cedar (*Thuja* spp.)/hemlock (*Tsuga* spp.) habitat types may also provide lynx habitat [Interagency Lynx Biology Team, 2013].

The size of lynx home ranges varies by the animal's gender, abundance of prey, season, and the density of lynx populations. Documented home ranges vary from 8 to 800 square kilometers (3 to 300 square miles), and home ranges at the southern extent of the species' range may be large compared to those in the northern portion of the range in Canada [U.S. Department of the Interior, Fish and Wildlife Service, 2000].

Lynx are highly specialized predators whose primary prey is the snowshoe hare, which has evolved to survive in areas that receive deep snow [U.S. Department of the Interior, Fish and Wildlife Service, 2000]. Snowshoe hares use forests with dense understories that provide forage, cover to escape from predators, and protection during extreme weather. Generally, earlier successional forest stages have greater understory structure than do mature forests and therefore

support higher hare densities; however, mature forests can also provide snowshoe hare habitat as openings develop in the canopy of mature forests when trees succumb to disease, fire, wind, ice, or insects, and the understory grows [USFWS, 2000]. Lynx concentrate their hunting activities in areas where hare activity is relatively high [USFWS, 2000]. In addition to hares, lynx also eat other small- to medium-sized animals and occasionally larger animals and carrion [Nellis, 1989].

The distribution and abundance of the lynx appears to be tied to that of the snowshoe hare; both species are generally confined to northern forest environments. Hares seek dense conifer thickets for food and thermal and escape cover, while lynx frequent these habitats in search of prey [Koehler and Aubry, 1994]. Lynx density generally varies with hare density. In northern Canada and Alaska, lynx populations fluctuate on approximately 10-year cycles that follow the cycles of hare populations [USFWS, 2000]. When hares are scarce, lynx may abandon home ranges and wander in search of prey. Lynx movements of 103 to 1,100 km have been recorded; however, presence of open areas greater than 100 m wide may create movement barriers [Koehler and Aubry, 1994]. These long-range movements may serve to repopulate vacated areas or to augment low populations along the southern edge of the lynx's range [Koehler and Aubry, 1994]. Thus, maintaining travel corridors between populations may be important to ensure the long-term viability of peripheral or isolated populations in the western mountains [Koehler and Aubry, 1994].

Lynx appear to prefer moving through continuous forest, frequently using ridges, saddles, and riparian areas [Interagency Lynx Biology Team, 2013]. Lynx have been observed to avoid large created or natural openings during daily movements within their home range [Interagency Lynx Biology Team, 2013]. Studies in northwest Montana show a strong preference for forested stands with dense horizontal cover because this is also the preferred habitat of snowshoe hares, which is the primary prey species for lynx in Montana [Squires and Ruggiero, 2007].

For most areas of the contiguous United States, the USFWS has no evidence that human-caused factors have significantly reduced the ability of lynx to disperse or have resulted in the loss of genetic interchange [USFWS, 2000]. As per Schwartz et al. [2004], relatively new evidence confirms that wild female lynx mate with wild male bobcats. Hybridization may be a limiting factor in the distribution, recruitment, and recovery of lynx throughout their range [Schwartz et al., 2004].

Lynx use large woody debris, such as downed logs and windfalls, to provide denning sites with security and thermal cover for kittens. For lynx den sites, the age of the forest stand may not be as important as the amount of downed, woody debris available [USFWS, 2000]. In Montana, lynx tend to use spruce/fir forest with high horizontal cover and abundant coarse woody debris for denning [Squires and Ruggiero, 2007]. Breeding occurs between February and April, and one to five kittens are born following an approximate 62-day gestation period [Nellis, 1989]. Young

remain with their mothers until 9 to 11 months old and may be sexually mature at 1 year [Nellis, 1989].

3.1.3 Reasons for Decline

According to the USFWS [2000], lynx are relatively rare in the contiguous United States because of habitats that are inherently unable to support cyclic, high-density snowshoe hare populations and are thus unable to sustain cyclic, high-density lynx populations. Factors affecting lynx habitat include human alteration of the distribution and abundance, species composition, successional stages, connectivity of forests, and the resulting changes in the forest's capacity to sustain lynx populations [USFWS, 2000]. People change forests through timber harvest, fire suppression, and conversion of forestlands to agriculture. Forest fragmentation may eventually become severe enough to isolate habitat into small patches, thereby reducing the viability of wildlife that are dependent on larger areas of forest habitat.

3.1.4 Occurrence in the Project Area

The project Action Area lacks the high-elevation mesic coniferous boreal, subboreal, and western montane forest habitat typically preferred by lynx in Montana. The nearest suitable habitat is located in the higher elevation mountainous areas surrounding the valley bottom.

3.2 GRIZZLY BEAR (*URSUS ARCTOS HORRIBILIS*)

3.2.1 Status and Distribution

At the time of western settlement in the early 1800s grizzly bears ranged from the Pacific Ocean to the Great Plains with an estimated population size of around 50,000 animals occurring in at least 37 separate populations [USFWS, 2014a]. The grizzly bear was listed as threatened in the lower 48 states under the ESA on July 28, 1975, following the extirpation of grizzlies in 31 of the original 37 separate populations [USFWS, 2014a]. Today, grizzly bears currently occur in five geographic areas: the Greater Yellowstone ecosystem (GYE), Northern Continental Divide ecosystem (NCDE), Cabinet-Yaak ecosystem (CYE), Selkirk ecosystem (SE), and Northern Cascade ecosystem (NCE). According to Kendall et. al. (2008), in 1998 and 2000 an estimated mean population of 241 grizzly bears occupied what was then termed the Greater Glacier Area. An increasing trend in grizzly bear numbers continued and in 2004 the estimated number had increased to 765 individuals (Kendall et. al. 2009). By 2016, an estimated 1,800 grizzlies resided in the lower 48 states.

The US 93 corridor and defined Action Area occur west of the Northern Continental Divide Grizzly Bear Recovery Zone (NCDGBRZ), which includes Glacier National Park and the greater Bob Marshall Wilderness Area. Noninvasive hair sampling DNA analysis conducted in 2004 within the recovery zone and adjacent occupied habitat outside the recovery zone (10-mile buffer)

supported the estimate of 765 grizzly bears in the NCDE [Kendall et al., 2009]. The greatest densities occurred in Glacier National Park in the north and the lowest densities were in the southern reaches of the study area [Kendall et al., 2009]. Additional population monitoring through radio collar studies between 2004 and 2014 indicate that the NCDE grizzly population was increasing at a rate of 2.3 percent per year. According to Kasworm et. al. (2013), over an eight-year period from 2005 through 2012, ten grizzly bears including seven females and three males were removed from the NCDE and moved to the Cabinet-Yaak Grizzly Bear Recovery Area to augment that population of grizzly bears. Despite the deliberate removals, the annual growth rate in the NCDE remained unchanged. In 2014, the estimated grizzly population in the NCDE was approximately 960 bears and in 2015, 982 grizzly bears (Costello et. al. 2016). This stable trend indicates that in the next five years approximately 121 more bears are likely to be recruited into the NCDE regardless of past management removal actions and current levels of illegal, accidental and natural mortalities.

3.2.2 Life History and Habitat Requirements

Grizzly bears are wide-ranging mammals that require large areas of undisturbed habitat. The average adult female home range size in the NCDE is 115 square km (72 square miles) [Christensen, 1982]. Home range sizes vary widely (approximately 11 to 2,000 square km [7 to 1,245 square miles]) and are dependent on food distribution [Reel et al., 1989]. On the Eastern Rocky Mountain Front, average male and female home ranges were 912 and 350 square km (1,460 and 560 square miles), respectively [Aune and Kasworm, 1989]. In the Cabinet-Yaak Grizzly Bear Recovery Zone, adult male home ranges average 1,172 square km and adult females 431 square km [Kasworm et al., 2007].

In summer, early fall, and winter, grizzlies occupy high-elevation habitats such as subalpine forests and timbered shrubfields. Primary foods in summer and fall include sedges, berries, forbs, and insects. During spring, grizzly bears move to lower elevations where meadows and riparian stream and river bottoms provide early emerging succulent forbs [Madel, 1982]. Grasses and ungulate carrion are also important spring foods. Closed timber stands adjacent to feeding areas are often used as bedding sites [Madel, 1982].

Denning occurs from late fall to March or early April at elevations above 1,980 m (6,500 feet) [Reel et al., 1989] in timbered shrubfields, huckleberry shrubfields and beargrass sidehill parks [Madel, 1982]. On the Eastern Rocky Mountain Front, 95 percent of dens were located above 1,900 m (6,232 feet) in elevation [Aune and Kasworm, 1989]. Females are able to breed at 4 to 7 years of age and generally produce cubs every 3 years [Reel et al., 1989]. Grizzlies breed from mid-April to mid-July, and cubs are usually born in the den in January. Cubs emerge from the den with the mother in March or early April, and remain with the mother for 2 years.

3.2.3 Reasons for Decline

Habitat loss and human encroachment are the primary reasons for the historic decline in grizzly bear populations [Reel et al., 1989].

3.2.4 Occurrence in the Action Area

As stated, the Action Area lies outside the designated NCDE boundary but well within the 10-mile buffer that is considered occupied habitat for the species. The Mission Mountain Range to the east is one of the 23 Bear Management Units (BMUs) designated for the NCDE. The Mission Mountains Tribal Wilderness Area was established in 1982 and encompasses over 91,000 acres of forestlands on the west side of the Mission Mountains. An additional 22,833-acre wilderness buffer area was established on the west side of the wilderness in 1987. Within the wilderness area is an 11,495-acre Grizzly Bear Conservation Area where grizzlies congregate in late summer and fall to feed on army cutworm moths [CSKT, 2014]. Between the Mission Mountains Tribal Wilderness Area and the Rattlesnake Wilderness Area to the south is the South Fork Primitive Area that consists of 59,079 acres. This area was set aside for the exclusive use of tribal members for hunting, fishing, camping, and spiritual uses [CSKT, 2014]. This primitive area designation serves to enhance and protect important grizzly bear habitat in this area.

With over 150,000 acres of tribally protected and managed habitat immediately east of the Action Area and a grizzly population that is growing at a rate of 2.3 percent annually, the potential for grizzly bears to occur in the Action Area is high. Biologists have seen an ever-increasing presence of grizzly bears venturing into the valley bottom from the adjacent Mission Mountains. In 2005, CSKT biologists began monitoring grizzly bear movements on the Flathead Indian Reservation with global positioning system (GPS) collars placed on individual bears captured on the reservation. Since 2005, 28 bears have been captured and collared on the reservation [CSKT, 2014]. Additionally, the CSKT maintains databases of grizzly bear mortalities on the reservation, credible sightings, and nuisance/management bears.

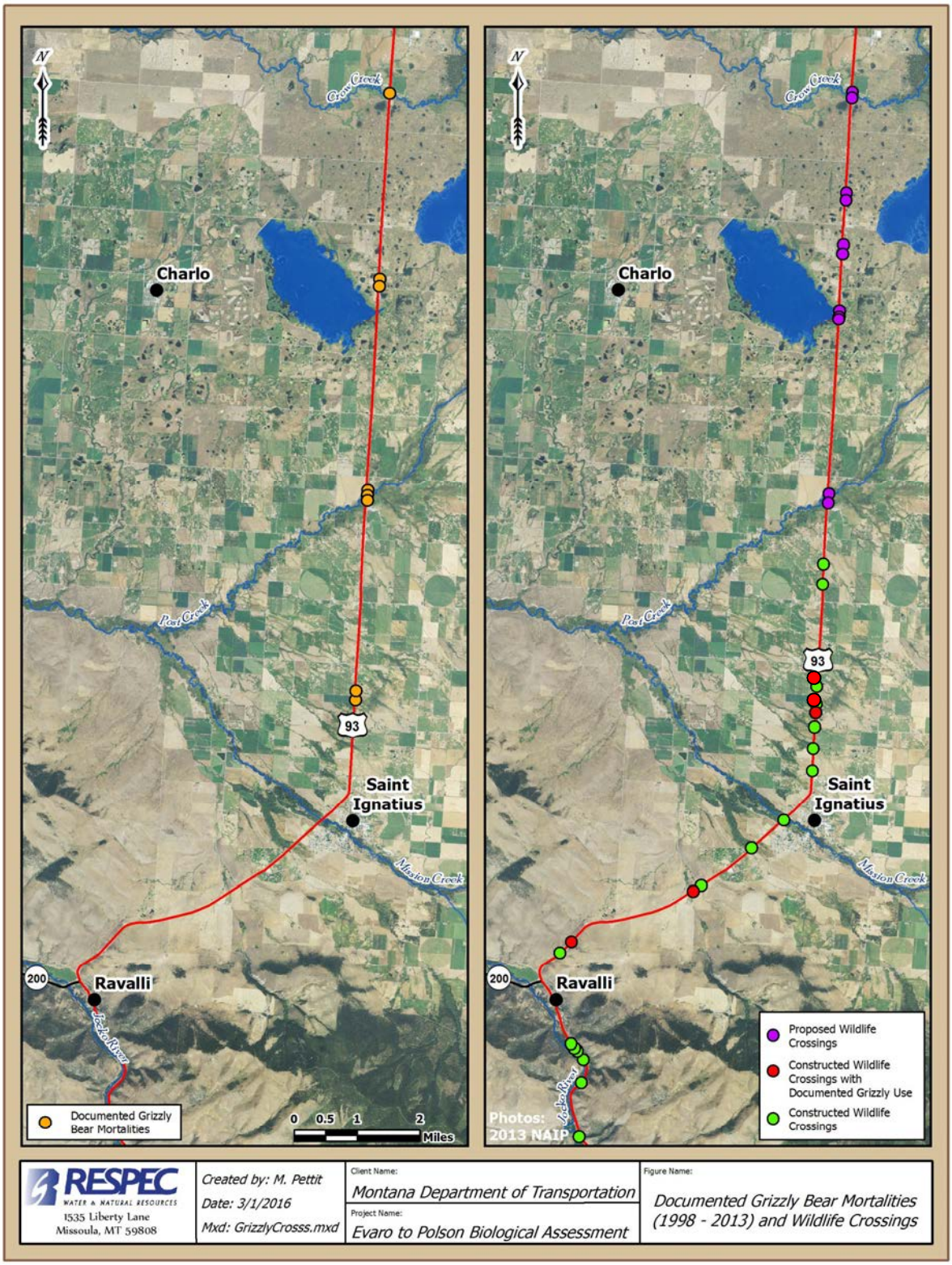
Data collected to date indicate that grizzly bears are freely moving about the valley bottom, especially at night, with concentrated use occurring along the Post Creek riparian corridor, within the foothills habitat east of Kicking Horse Reservoir and on the Ninepipe National Wildlife Refuge [CSKT, 2014]. Throughout the remainder of the Evaro-Polson corridor, grizzly bear activity has been documented north and south of Saint Ignatius, south of the community of Ravalli, along the Jocko River near Arlee, and north of Evaro on the south end of the corridor [CSKT, 2014]. The Post Creek riparian corridor provides security cover as well as feeding opportunities for grizzly bears while the Ninepipe/Kicking Horse area provides large tracks of relatively undeveloped habitat for bears to use.

While most grizzly activity appears to be occurring east of US 93, movements back and forth across the highway have been documented, and grizzly bears are periodically killed in collisions with vehicles on US 93 in the Action Area and the larger corridor study area. Between 1998 and 2015, eight documented grizzly bear mortalities occurred as a result of collisions with vehicles on US 93 between Saint Ignatius and Ronan (Figure 3-2). Of those, three occurred in the vicinity of Post Creek, two in the Ninepipes area, and one near Crow Creek within the action area; the other two occurred north of Saint Ignatius outside the action area but within the Evaro-Polson corridor.

Since the last BA for the US 93 corridor was prepared, 42 wildlife crossings have been constructed between Evaro and Polson to provide grizzly bears a safe means to move between preferred habitats on both sides of the roadway. Annual monitoring through 2016 has documented grizzly bear use at five crossings with a total of 29 individual crossings. Additional crossings have been observed by tribal wildlife staff in the Ravalli Curves area [CSKT, 2014] but occurred before formal monitoring, so which crossings were used is unknown. Additional crossings possibly occurred at one or more of the 13 crossings that were not monitored.

Of particular interest are the 2012 grizzly bear mortalities north of Saint Ignatius that occurred in close proximity to recently constructed wildlife crossings. The MDT is currently looking at fencing options to better guide bears to constructed crossings and is proposing this option as a mitigation discussed previously in this report. Additionally, it is important to note that the other five documented mortalities at Post Creek and near Ninepipe Reservoir are in areas already identified by the MDT as problem areas with proposed mitigation being developed at this time.

Figure 3-2. **US 93 Evaro to Polson Documented Grizzly Bear Mortalities (1998–2013) and Wildlife Crossings.**



3.3 YELLOW-BILLED CUCKOO (*COCCYZUS AMERICANUS*)

3.3.1 Status and Distribution

The western DPS of the yellow-billed cuckoo was listed as a threatened species by the USFWS on October 3, 2014 [79 FR 59991 60038]. In Montana, the western quarter of the state (west of the Continental Divide) was included in the DPS by the USFWS even though there are very few records of the species exist in Montana and only three occurring in the last 30 years [79 FR 59991 60038]. The yellow-billed cuckoo is a migratory species, and winters in South America and breeds in North America. Once thought to breed in most of the western United States and Canada, the species no longer breeds in western Canada, Washington, Oregon, and Montana. The species is also considered very rare in Utah, Colorado, and Wyoming.

The USFWS released a proposed rule to designate critical habitat for the western DPS of the yellow-billed cuckoo on August 15, 2014. In total, approximately 546,335 acres of habitat are being proposed in Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah, and Wyoming. No designated critical habitat has been proposed for Montana.

3.3.2 Life History and Habitat Requirements

Yellow-billed cuckoos migrate north from South America in the spring to breeding grounds in the southwestern United States. Preferred breeding habitat includes open woodland (especially where undergrowth is thick), parks, and deciduous riparian woodland. In the west, the yellow-billed cuckoo nest in tall cottonwood and willow riparian woodlands. Nests are found in trees, shrubs, or vines and average 1 to 3 meters above ground [Montana National Heritage Program, 2015]. No information is available for feeding habits in Montana but across its range, the main diet is caterpillars [Montana National Heritage Program, 2015].

3.3.3 Reasons for Decline

The USFWS noted the primary factors threatening the western DPS as loss and degradation of habitat for the species from altered watercourse hydrology and natural stream processes, livestock overgrazing, encroachment from agriculture, and conversion of native habitat [USFWS, 2014b].

3.3.4 Occurrence in the Action Area

As stated, recorded sightings of yellow-billed cuckoos in Montana are rare and there are no documented breeding records. Montana sightings are likely of transient migratory birds passing through the state [Montana National Heritage Program, 2015]. Previous sightings have occurred in Lake County, however the most recent sightings are greater than 20 years old. Suitable habitat for the species may occur along major riparian areas in the project corridor and more specifically along Post Creek in the defined Action Area.

3.4 BULL TROUT (*SALVELINUS CONFLUENTUS*) AND DESIGNATED CRITICAL HABITAT

3.4.1 Status and Distribution

In June 1998, the USFWS published the final rule listing the Klamath River and Columbia River distinct population segments of bull trout as threatened [USFWS, 1998a], with an effective date of July 10, 1998. In November 1999, the USFWS published a rule listing all populations of bull trout as threatened throughout its entire range in the coterminous United States [USFWS, 1999] with an effective date of December 1, 1999. Bull trout occur in five population segments distributed in Washington, Oregon, Nevada, Idaho, and Montana, as well as the Canadian provinces of British Columbia and Alberta. In western Montana, bull trout occur within two major subbasins of the Columbia River Basin: the Kootenai and Clark Fork drainages, both of which comprise discrete population segments [Montana Bull Trout Restoration Team, 2000].

On September 26, 2005, the USFWS designated bull trout critical habitat in Montana and three other western states [USFWS, 2005]. On September 30, 2010, the USFWS revised its designation of bull trout critical habitat throughout its United States range [USFWS, 2010]. Approximately 18,795 miles of stream and 488,252 acres of lakes and reservoirs in Oregon, Idaho, Montana, Nevada, and Washington were designated as critical habitat [USFWS, 2010]. Under the 2005 rule, Post Creek, from its confluence with Mission Creek, upstream 26.1 km to McDonald Lake was designated as critical habitat for the species. Formal consultation for impacts to designated critical habitat in Post Creek was completed in 2005. As a result of the revised designation, no stream reaches, lakes, or reservoirs within the Action Area are designated as critical habitat; however, the upper reaches of Post Creek (east of the Action Area) remain listed as critical habitat because of the presence of a resident population in the headwaters of this drainage. Because no designated critical habitat occurs within the Action Area, no further analysis is deemed necessary.

3.4.2 Life History and Habitat Requirements

Bull trout may have either a resident or a migratory (adfluvial) life history. Resident fish usually spend their entire life in headwater streams. Migratory fish spawn and rear their progeny from one to several years in tributary streams before migrating downstream to larger rivers or lakes where they mature and spend most of their adult life [Montana Bull Trout Restoration Team, 2000]. Adults migrate back to their natal tributaries to spawn. Seasonal movements may range up to 186 miles as migratory fish move from spawning and rearing areas into overwintering habitat in downstream reaches of large basins. Both resident and migratory forms may occur together in some systems [USFWS, 1998a].

In Montana, spawning occurs from late August through early November; principally in third-and fourth-order streams [Montana Bull Trout Restoration Team, 2000]. Spawning is generally concentrated in reaches influenced by groundwater, where temperature and flow conditions may

be more stable. Hatching may occur in winter or early spring, but alevins may remain in the gravel for extended periods after yolk absorption [USFWS, 1998a]. Although growth, maturation, and longevity vary with environment, first spawning is often noted after age 4, with individuals living 10 or more years [USFWS, 1998b]. Habitat associations for bull trout are summarized in Table 3-1.

3.4.3 Reasons for Decline

The decline in bull trout populations has been attributed to habitat degradation and fragmentation, obstruction of migratory corridors, poor water quality, past fish management practices, and introduction of nonnative species.

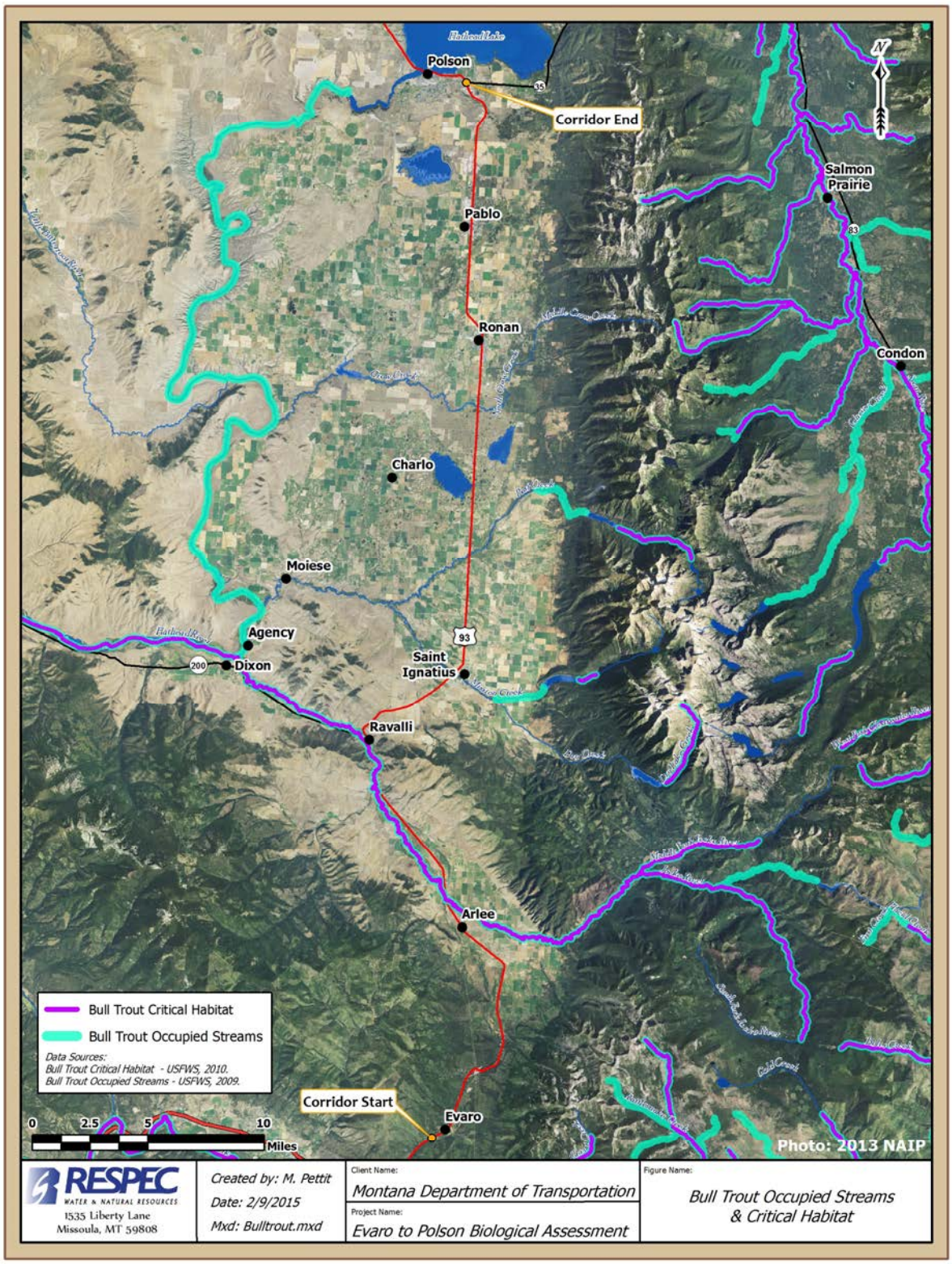
- Distribution in the Project Area. Since the 2005 BA was written for this road segment, little additional information pertaining to bull trout in the Action Area has become available. Subsequently, much of the following text comes from the Herrera Environmental Consultants [2005] for this project. Figure 3-3 illustrates the occupied streams in the Evaro-Polson corridor as well as streams designated as critical habitat.
- Within the Action Area. Post Creek is the only known drainage to support bull trout. Historically, the Mission Creek drainage, including Post Creek, was one of the most important spawning tributaries for bull trout residing between Flathead Lake and the Clark Fork River [CSKT, 2000].

Information is limited on the life history of bull trout residing in Post Creek. Bull trout using Post Creek are assumed to have always been of the migratory form [CSKT, 2000]. McDonald Reservoir, located at the headwaters of Post Creek, currently supports an isolated, migratory population of bull trout. This population spawns in Post Creek above the reservoir.

Table 3-1. Summary of Bull Trout Habitat Requirements [Montana Bull Trout Scientific Group, 1998]

Life-History Parameter	Discussion
Spawning	The majority of migratory bull trout spawning in Montana occurs in a small percentage of the total stream habitat available. Spawning takes place between late August and early November, principally in third- and fourth-order streams. Spawning adults use low-gradient areas (< 2%) of gravel/cobble substrate with water depths between 0.1 and 0.6 meter and velocities from 0.1 to 0.6 meters per second. Proximity of cover for adult fish before and during spawning is an important habitat component. Spawning tends to be concentrated in reaches influenced by groundwater where temperature and flow conditions may be more stable. The relationship between groundwater exchange and migratory bull trout spawning requires more investigation. Spawning habitat requirements of resident bull trout are poorly documented.
Incubation	Successful incubation of bull trout embryos requires water temperatures below 8°C, less than 35–40% of sediments smaller than a 6.35-mm diameter, and high gravel permeability. Eggs are deposited as deep as 25 cm below the streambed surface, and the incubation period varies depending on water temperature. Spawning adults alter streambed characteristics during redd construction to improve survival of embryos, but conditions in redds often degrade during the incubation period. Mortality of eggs or fry can be caused by scouring during high flows, freezing during low flows, superimposition of redds, or deposition of fine sediments or organic materials. A significant inverse relationship exists between the percentage of fine sediment in the incubation environment and bull trout survival to emergence. Entombment appeared to be the largest mortality factor in incubation studies in the Flathead Drainage. Groundwater influence plays a large role in embryo development and survival by mitigating mortality factors.
Juvenile Rearing in Tributary Streams	Basic rearing habitat requirements for juvenile bull trout include cold summer water temperatures (£ 15°C) provided by sufficient surface and groundwater flows. Warmer temperatures are associated with lower bull trout densities and can increase the risk of invasion by other species that could displace, compete with, or prey on juvenile bull trout. Juvenile bull trout are generally benthic foragers and rarely stray from cover. High sediment levels and embeddedness can result in decreased rearing densities. Unembedded cobble/rubble substrate is preferred for cover and feeding and provides invertebrate production. Highly variable streamflow, reduction in large, woody debris, bedload movement, and other forms of channel instability can limit the distribution and abundance of juvenile bull trout.
Subadults and Adults in Tributary Streams	Habitat characteristics that are important for juvenile bull trout of migratory populations (low-water temperatures, clean cobble-boulder substrates, and abundant cover) are also important for stream-resident subadults and adults. However, stream-resident adults are more strongly associated with deep pool habitats than are migratory juveniles.
Movement and Migration in Tributary Streams	Both migratory and stream-resident bull trout move in response to developmental and seasonal habitat requirements. Migratory individuals can move great distances (up to 250 km) among lakes, rivers, and tributary streams in response to spawning, rearing, and adult habitat needs. Stream-resident bull trout migrate within tributary stream networks for spawning purposes, as well as in response to changes in seasonal habitat requirements and conditions. Open migratory corridors, both within and among tributary streams, larger rivers, and lake systems are critical for maintaining bull trout populations.
Subadults and Adults in Large Rivers	Small numbers of migratory fish apparently move into large rivers within their first year of life, but most remain in tributaries for 1 year or more before moving downstream. After they reach large river habitats, bull trout can remain there for brief periods, or for as long as several years, before either moving into lakes or returning to tributary streams to spawn. During their river residency, bull trout commonly make long-distance annual or seasonal movements among various riverine habitats, apparently in search of foraging opportunities and refuge from warm, low-water conditions in mid-summer and ice in winter. Little is known about how these patterns vary among basins, but it is likely that river residency and migratory behavior in each bull trout stock largely reflects local adaptation to the specific array of suitable habitats historically available in the basin. The degree of genetic control of migratory behavior in bull trout is unknown.
Subadults and Adults in Lakes	Lakes and reservoirs are critically important to adfluvial bull trout populations. In 6 of the 11 bull trout restoration/conservation areas (Flathead, Swan, South Fork Flathead, Upper Kootenai, Lower Kootenai, and Lower Clark Fork), large, standing bodies of water form the primary habitat for rearing of subadult trout and provide food and cover for fish to achieve rapid growth and maturation. Growth rates of juvenile bull trout increase substantially as they enter large river and lake environments and shift from a diet of insects to fish. Despite the importance of lakes and reservoirs, very limited information is available range-wide on habitat use by bull trout in lentic waters. In general, bull trout appear to use benthic areas in lakes but use predominantly shallow zones (< 40 m), provided water temperatures are < 15°C. During summer, bull trout appear to primarily occupy the upper hypolimnion of deep lakes but forage opportunistically in shallower waters. River/lake transition zones appear to be particularly important habitats. Introduced species, especially lake trout and *Mysis relicta* in combination, have been implicated in cascading food web interactions that have led to declines or extinctions of bull trout in many lakes. Although poorly understood at this time, habitat conditions in lakes and reservoirs are critical to persistence of bull trout populations and require additional investigation.

Figure 3-3. **US 93 Evaro to Polson Bull Trout Occupied Streams and Critical Habitat.**



3.4.4 Occurrence in the Action Area

Actual occurrence of bull trout within Post Creek below the McDonald Lake is not well known. In 2000, less than 50 individuals were assumed to use the stream [CSKT, 2000]. The tribe considers Post Creek in the Action Area to be nodal migratory habitat for adults and juveniles [Barfoot, 2014]. It is not known if the bull trout present are a result of outmigration from McDonald Lake, migrants from the Jocko River population that have entered through the Pablo feeder canal (the Pablo feeder canal is an irrigation canal that intercepts numerous streams in the project vicinity and may transport fish from other systems into Post Creek), or individuals migrating from the Flathead River. Captures of bull trout immediately below the dam suggest that the McDonald Lake population exports individuals into Post Creek, but the low numbers found in the stream suggest that bull trout are not successfully spawning below the reservoir [CSKT, 2000]. Three individuals were captured in 1984 and 1985 moving from the Flathead River into Mission Creek, but movement into Post Creek was considered unlikely because of degraded water quality in the lower reaches [CSKT, 2000]. Limited information exists to determine the status of the species in Post Creek below the dam, but occurrence of small numbers within the project reach is assumed. Little-to-no spawning and rearing habitat occurs in the area of US 93 and use of the stream in this area is most likely limited to migration.

Post Creek currently crosses US 93 at River Mile (RM) 7.0 and this section of the creek is not designated as either a bull trout occupied stream or bull trout critical habitat by the USFWS. Post Creek is designated as a bull trout occupied stream starting at RM 11.6 and continues upstream to RM 20.4. USFWS designated critical habitat starts at McDonald Lake (RM 14.8) and continues upstream to RM 20.4. No bull trout have been documented in Post Creek within the project area.

3.5 SPALDING'S CAMPION (*SILENE SPALDINGII*)

3.5.1 Status and Distribution

Spalding's campion is ranked globally as G2 (imperiled), ranked in Montana as S2 (imperiled), and listed by the USFWS as threatened. The USFWS listed Spalding's campion as threatened under the ESA on October 10, 2001. A recovery plan was developed for Spalding's campion in 2007 by the USFWS [2007].

Spalding's campion is a perennial forb restricted to the Palouse Prairie and the Pacific Northwest Bunchgrass grasslands in eastern Oregon and Washington, north-central Idaho, and northwestern Montana [Mancuso, 1996; USFWS, 2007]. Spalding's campion prefer mesic (not extremely wet or dry) slopes, flats, or depressions in grassland, sagebrush-steppe, or open pine forest with vegetation dominated by rough fescue (*Festuca scabrella*), Idaho fescue (*F. idahoensis*), or native perennial grasses [USFWS, 2007]. This plant generally grows in deep loamy soils and in mesic, moist sites such as northern slopes and swales [USFWS, 2007].

Populations have been found on flat to 70 percent slopes and from approximately 1,200 to 5,300 feet in elevation [USFWS, 2007].

Spalding's campion occupies habitat in five physiographic regions: Blue Mountains (northeastern Oregon), Canyon Grasslands (Snake, Salmon, Clearwater, Grande Ronde, and Imnaha Rivers in Idaho, Oregon, and Washington), Channeled Scablands (east-central Washington), Intermontane Valleys (northwestern Montana), and Palouse Grasslands (southeastern Washington and west-central Idaho) [USFWS, 2007].

In Montana, this species is only known from a handful of locations in the northwest part of the state including the Tobacco Plains Area, Lost Trail National Wildlife Refuge, the Niarada Area, and on Wild Horse Island in Flathead Lake [Montana Natural Heritage Program, 2015].

3.5.2 Life History and Habitat Requirements

The recovery plan summarized data on the life history of Spalding's campion [USFWS, 2007]. This plant is a long-lived perennial that may live to 20 years or more. Adult plants emerge in the spring (usually May) as either a rosette, stemmed plant, or with both a rosette and stem. Stemmed plants may remain vegetative or become reproductive from July to August. Plants wither from September to October and overwinter as a root-stalk. Many studies in Idaho and Montana have shown that mature plants can go through dormancy. Dormancy can last from 1 to 6 years. Prolonged dormancy has been associated with precipitation and life-history stage. Prolonged dormancy has made population estimates and monitoring difficult. Pollinators include bumblebees (*Bombus fervidus*), solitary bees (*Lasioglossum ovaliceps*, *Halictus tripartitus*, *Dienoplus rugulosis*, and *Lasioglossum* spp.), wasps, and night-pollinating moth species.

3.5.3 Reasons for Decline

Large-scale ecological changes in the Palouse region over the past several decades, including agricultural conversion, changes in fire frequency, and alterations of hydrology, have resulted in the decline of Spalding's campion [Tisdale, 1961]. More than 98 percent of the original Palouse prairie habitat has been lost or modified by agricultural conversion, grazing, invasion of nonnative species, altered fire regimes, and urbanization [USFWS, 2007].

3.5.4 Occurrence in the Action Area

Spalding's campion has not been documented within the Action Area or the entire Evaro to Polson corridor. The species is known from a handful of sites north and west of the project corridor including one population on Wildhorse Island in Flathead Lake approximately 10 miles north of Polson. The project area lacks undisturbed bunchgrass communities typical of Palouse ecosystems that support Spalding's campion.

3.6 WATER HOWELLIA (*HOWELLIEA AQUATILIS*)

3.6.1 Status and Distribution

Water howellia is a wetland plant that was listed by the USFWS as a threatened species on August 15, 1994 [USFWS, 1994]. The species historically occurred over a large area of the Pacific Northwest United States but today is only found in a few specific habitats and regions of Montana, Washington, and Idaho [USFWS, 1994]. The species is found in small depressional wetlands that partially or completely dry up by the fall. In Montana, the species is known to occur in Lake and Missoula Counties, with all documented occurrences from the Swan Valley [USFWS, 1994].

3.6.2 Life History and Habitat Requirements

Water howellia is an annual plant that reproduces entirely by seed. The plant is predominantly a winter annual with germination taking place in the fall and seedlings overwintering and resuming growth in the spring. Germination of seeds occurs only when ponds dry out and seeds are exposed to air [Montana Natural Heritage Program, 2015]. Water howellia is most often associated with shallow, low-elevation glacial pothole ponds and former river oxbows with margins of deciduous trees and shrubs [Montana Natural Heritage Program, 2015]. These habitats are inundated by spring rains and snowmelt runoff and typically dry out by the end of the growing season. The plants tend to root in the shallow water at the edges of deeper ponds that are typically surrounded by deciduous trees [Montana Natural Heritage Program, 2015].

3.6.3 Reasons for Decline

Water howellia has very specific and narrow habitat and moisture requirements that greatly limit the locations in which it can occur. These very specific habitat requirements also make it vulnerable to any human or natural disturbance that alters the hydrology of occupied habitat [Montana Natural Heritage Program, 2015; USFWS, 1994]. Another primary threat to the species is the spread of reed canary grass (*Phalaris arundinacea*), which is a highly competitive grass that invades wetlands and forms dense monocultures, which causes the decline of nearly all other plants in a wetland [Montana Natural Heritage Program, 2015, USFWS, 1994].

3.6.4 Occurrence in the Action Area

The Action Area, especially in the vicinity of Ninepipes National Wildlife Refuge, contains hundreds of glaciated potholes with water regimes that typically support this species; however, water howellia has never been recorded in the Mission Valley. The only documented populations occur in the Swan Valley to the north and east of the project area on the other side of the Mission Mountain Range.

3.7 WOLVERINE (*GULO GULO LUSCUS*)

3.7.1 Status and Distribution

Wolverines were nearly extinct in Montana during the early 1900's and have been increasing in numbers and range since (MNHP (2016). Recovery originated in northwestern Montana and subsequently spread to its current range (Newby and Wright 1955, Newby and McDougal 1964).

Wolverines are classified as a furbearer in Montana. However, the trapping season is currently suspended with a statewide quota of zero (MNHP, 2016). On August 13, 2014, the U.S. Fish and Wildlife Service withdrew a proposal to list the North American wolverine in the contiguous United States as a threatened species under the Endangered Species Act (ESA), however, in 2016 the U.S. Fish and Wildlife Service (Service) reopened the public comment period on a proposed rule to list the North American wolverine as threatened under the Endangered Species Act (ESA). The wolverine is currently listed as Proposed.

3.7.2 Life History and Habitat Requirements

The Wolverine is a bear-like mustelid with bulky limbs and long, dense, dark brown pelage, paler on the head, with two broad yellowish stripes extending from the shoulders and joining on the rump. Variable white or yellowish markings are often present on the throat and chest. The tail is bushy. The feet are relatively large (2.5 to 4.5 inches in total length) with robust claws. Wolverines weigh between 15 and 70 pounds and range from 3.0 to 3.6 feet in length. Wolverines in northwestern Montana tend to occupy higher elevations in summer and lower elevations in winter. Seasonal ranges usually occur within a large home range; dispersal movements of more than 185 miles are known. In Montana, wolverines have been found to use medium to scattered timber the most, while areas of dense, young timber were used least. Wolverines avoid clear-cuts and burns, crossing them rapidly and directly when they were entered at all. Most habitat descriptions in the literature are characterized by "large, mountainous, and essentially roadless areas" (http://fieldguide.mt.gov).

3.7.3 Reasons for Decline

Habitat loss and fragmentation are primary contributors to population decline.

3.7.4 Occurrence in the Action Area

The Action Area for this project occurs at low elevations (± 3,000 feet) in the Mission Valley which is not preferred habitat for wolverine. The nearest suitable habitat is located east of the Action Area at higher elevations in the Mission Mountain Range. No wolverine are known or expected to occur in the Action Area.

3.8 MELTWATER LEDNIAN STONEFLY (*LEDNIA TUMANA*)

3.8.1 Status and Distribution

The meltwater lednian stonefly is a small insect that begins life as an aquatic nymph and later matures into a winged adult that lives on land. The species requires extremely cold glacier-fed streams at high elevations and is only known to occur in Glacier National Park [Montana National Heritage Program, 2015]. Within the last 14 years, the meltwater lendian stonefly has been observed in 16 streams or hydrologic drainages within the boundaries of Glacier National Park [USFWS, 2014b]. The species was listed as a candidate species for listing under the Endangered Species Act in 2011.

3.8.2 Life History and Habitat Requirements

Little is known about the habits and ecology of this species. As mentioned, the species requires extremely cold water, with most observations occurring within a few hundred meters of the base of glaciers or snow melt-derived streams [Montana National Heritage Program, 2015]. Meltwater lednian stoneflies are thought to emerge from their aquatic environments in August and September to mature to adulthood and breed [USFWS, 2014b].

3.8.3 Reasons for Decline

The primary threats to this species are in relation to climate change and the loss of glaciers in Glacier National Park and the associated warming of streams fed by glaciers.

3.8.4 Occurrence in the Project Area

As noted, the meltwater lednian stonefly is only known to occur in high-elevation streams in central Glacier National Park. The proposed project is located southwest of Glacier National Park and at low elevation outside the range of this species. The species is not expected to occur in the project area.

3.9 WHITEBARK PINE (*PINUS ALBICAULIS*)

3.9.1 Status and Distribution

The USFWS added whitebark pine to the candidate species list on July 19, 2011 [USFWS, 2011]. This listing followed a 12-month finding in which the USFWS determined that the whitebark pine is warranted for listing under ESA but is precluded by higher priority actions. A formal proposal to list the species as threatened or endangered will be developed as priorities and funding allow.

3.9.2 Life History and Habitat Requirements

Whitebark pine trees are found between longitude 107 and 128 degrees west and between latitude 27 and 55 degrees north [USFWS, 2011]. The Rocky Mountain distribution extends from northern British Columbia and Alberta to Idaho, Montana, Wyoming, and Nevada. In Montana, whitebark pine trees grow at higher elevations and have been found in seven counties in western and north-central Montana [Lesica, 2012]. Although whitebark pine trees grow in Lake County (at higher elevations with more moisture), low-elevation habitats within the Action Area are not conducive to its germination, growth, and establishment.

3.9.3 Reasons for Decline

A variety of risk factors affect whitebark pine distribution and health in North America. In 1910, the white pine blister rust fungus was introduced to western North America and is one of the leading causes for the long-term decline of this species [USFWS, 2011]. Other factors influencing the decline in the species include fire suppression by humans, climate change, and infestations of mountain pine beetle (*Dendroctonus ponderosae*). Mountain pine beetle is currently recognized as one of the principal sources of mortality in whitebark pine.

3.9.4 Occurrence in the Action Area

The Action Area for this project occurs at low elevations (± 3,000 feet) in the Mission Valley which is not preferred habitat for whitebark pine. The nearest suitable habitat is located east of the Action Area at higher elevations in the Mission Mountain Range. No whitebark pine trees are known or expected to occur in the Action Area.

4.0 EFFECTS ANALYSIS AND EFFECT DETERMINATIONS

This chapter discusses potential impacts and cumulative effects followed by a determination of effect for each listed species. The effects analysis is primarily focused on the defined Action Area for the remaining project segments that have not been built in the Ninepipe/Ronan segment. However, the long-term operation and maintenance (O&M) of the entire US 93 Evaro-Polson corridor is considered in this BA as it pertains to grizzly bears. Any future design modifications from those described in Chapter 1.0 of this BA would need to be reviewed for potential impacts to T&E species.

4.1 POTENTIAL DIRECT IMPACTS

This section describes potential direct impacts that would likely occur from reconstructing US 93 in the Ninepipe/Ronan corridor. The four project segments are in various stages of project development at this time and, therefore, direct impacts are currently difficult to quantify. The following discussion lists various impacts that are common to these types of roadway reconstruction projects and are likely to occur as a result of this project. Additional impacts specific to individual T&E species are further described and assessed as necessary under each species heading.

4.1.1 Roadway Reconstruction

Direct impacts to occupied T&E species habitat (mainly grizzly bear) would occur as a result of fill placement for the new roadway and clearing of the new ROW. As previously discussed, a majority of the habitat within the existing ROW has been previously disturbed by the original construction of the roadway and long-term O&M activities and is of low to moderate quality. Similarly, much of the habitat that lies outside of the existing ROW but within the projected footprint of the proposed roadway design is of low to moderate quality because of long-term management of private lands for agricultural uses and rural home and business sites. However, habitat associated with Post Creek, Crow Creek, and the Ninepipe National Wildlife Refuge is of moderate to high quality and is used by grizzly bears in the project corridor.

The single, most significant direct impact to grizzly bear habitat would likely occur at Post Creek where the new roadway will be widened and a temporary detour structure will be built. Approximately 0.8 hectares (2 acres) of wetland and riparian forest and shrub habitat known to be used by grizzly bears will be impacted. This impact would be mitigated in part through the long-term reestablishment of riparian habitat in the location of the temporary detour bridge. The construction of a new 500-foot bridge over Post Creek and its associated floodplain is another mitigating factor that will greatly improve the ability for grizzly bears to safely move back and forth underneath the highway, thus lessoning the long-term adverse impacts of direct habitat loss in this area. Similarly, the direct loss of grizzly bear habitat in the Ninepipe corridor would be

minimized to the greatest extent possible by staying on the current roadway alignment and constructing eight wildlife underpasses in this corridor to help mitigate the direct loss of habitat.

Construction-related noise and increased human presence on the landscape is another direct, but short-term, impact of highway construction. During construction, the presence of large earth-moving equipment as well as construction crews will likely deter wildlife, including T&E species, from using habitat within the Action Area. Grizzly bears are generally secretive animals that avoid human interaction under most circumstances. Any bears using the Post Creek riparian corridor or habitat on the Ninepipe Refuge during construction would likely be displaced temporarily from the corridor by construction activities. Bears may leave the Action Area entirely for the construction duration or only use habitat during nighttime hours when construction activities are shut down. Conservation measures used to minimize or eliminate short-term, adverse construction-related noise and human impacts are described in Section 4.5.

Habitat fragmentation can be defined as separating previously contiguous blocks of habitat into one or more disconnected pieces [Waller and Servheen, 1999]. Habitat fragmentation can result in impediments to wildlife dispersal and corresponding genetic exchange among populations. The proposed action would increase the capacity of the roadway and widen it, thus resulting in increased fragmentation by widening the distance between cross-highway habitats.

The interagency lynx biology team [Interagency Lynx Biology Team, 2013] cites highway/ carnivore research in Canada that suggests highway traffic volumes of 2,000–3,000 vehicles per day are problematic with respect to wildlife habitat fragmentation and mortality. Traffic volumes exceeding 4,000 vehicles per day may result in serious habitat fragmentation and mortality impacts. Existing traffic volumes of 6,400 to 7,500 vehicles per day and projected traffic volumes of 10,000–15,000 vehicles per day are of concern in this area with respect to wildlife trying to cross the roadway. Biologists with the CSKT and MDT have long understood that US 93 is an impediment to east/west wildlife movement in the study corridor. The 42 existing wildlife crossings and 8 proposed crossings in the Ninepipe/Ronan corridor have been or will be constructed to help minimize the effects of fragmentation on the landscape.

4.1.2 Bridge Reconstruction

In an attempt to minimize impacts to forested wetland habitat and grizzly bear habitat west of the existing Pole Creek bridge, the new roadway alignment will follow the existing alignment to the greatest extent possible. During construction of the new Post Creek bridge and approach roadway, traffic will be routed onto a detour road immediately upstream (east) of the highway. The temporary detour road and bridge will be 7-meters (24-ft) wide with the temporary bridge completely spanning Post Creek. No instream work is expected during construction and demolition of the temporary detour bridge. Approximately 0.4 hectares (1 acre) of riparian shrub and wetland habitat will be temporarily disturbed by construction of the detour road.

Before construction of the new Post Creek bridge, the existing bridge, which has one instream pier, will be removed. Removing the existing structure has the potential to create short-term water quality impacts to Post Creek. Removing the bridge end abutments, which are situated immediately adjacent to the active flow in the channel, would result in short-term sediment impacts to the stream, as would removing the lone instream pier. Increases in turbidity, suspended sediment, and other pollutants can reduce stream productivity, reduce feeding opportunities for fish, and result in fish avoidance of important habitat. Deposited sediments reduce habitat volume by filling pools and inter-gravel spaces that are critical to young fish. Coffer dams or similar structures will be used by the contractor during bridge pier and abutment removal to help minimize sediment-related impacts in Post Creek.

The new Post Creek bridge will span the creek entirely and therefore, no instream work is proposed and no direct impacts to the channel or its banks are anticipated. The new 152-meter (500-ft) bridge will be a multi-span structure that spans a majority of the Post Creek floodplain in this area. The two piers closest to Post Creek are both situated approximately 12 meters (40 ft) from the ordinary high-water mark of the stream. Temporary work bridges may be used during construction of the new bridge but their use is at the discretion of the construction contractor. Although final bridge design has not yet been completed, drilled shaft piers will be used in new bridge construction if at all possible. Driving of pile, if necessary for detour or work bridge construction, will be limited to between July 1 and August 31, when already rare migratory bull trout are even less likely to be present. No pile will be driven within the wetted channel. Additional approved conservation measures requested by CSKT and USFWS will be incorporated into the project special provisions.

When the new bridge and approach roadway are completed, traffic will be rerouted to the new structure and the temporary detour and approach roadway will be removed. All areas temporarily impacted by the detour will be revegetated with appropriate plant materials as prescribed by MDT's botanist.

Before and during construction, the contractor would be required to acquire and comply with various tribal, state, and federal water quality permits and authorizations in association with this project. The contractor must comply with all applicable laws or regulations for preventing or abating erosion, water pollution, and siltation. An erosion control plan must be followed to prevent polluting and siltation of state waters. Chemicals, fuels, lubricants, bitumen, raw sewage, and other wastes must be prevented from entering state waters. Erosion, siltation, and water pollution must be controlled during all work suspensions.

Temporary erosion control devices must be installed before each construction stage and maintained until they are no longer needed or conflict with the work. Devices conflicting with the work that are removed must be replaced at the end of each shift. Damaged, inadequate, or nonfunctioning devices must be repaired or replaced. Disturbed sites must be regraded to match the surrounding terrain.

Construction of the new bridge and roadway would directly remove riparian vegetation both north and south of Post Creek. Riparian vegetation removal could cause minor, indirect negative impacts to fish by removing shade and potentially increasing local water temperatures. High-water temperatures can delay or stop salmonid migration, spawning, egg development, and rearing. Because of the small amount of vegetation to be cleared immediately adjacent to the stream, this potential impact is expected to be minor. Rehabilitation and revegetation of disturbed areas following construction would help to minimize adverse impacts.

Noise impacts are anticipated from installation of new bridge piers and a temporary work bridge. The permanent replacement bridge piers would likely use drilled shafts, while temporary work bridges typically use driven piles.

Pile driving for the temporary bridges would likely be required for the construction of a temporary work bridge, potentially requiring placement of temporary piers in the active channel. While many studies have been performed modeling the hydroacoustic effects of pile driving in lentic (standing water) systems, only a limited amount of information is available on the effects in lotic (flowing water) systems. The potential short-term effect to bull trout and other fish in the project area from pile driving would be barotrauma, i.e., the physical damage to body tissues changed by a cause in pressure. Potential noise and sediment impacts to bull trout from pile driving and other work activities will be mitigated by employing the conservation measures described in Section 1.2.4 of this document.

4.1.3 Effects to Bull Trout Indicators

The effects of the proposed action on relevant bull trout indicators [USFWS, 1998b] relative to the proposed Ninepipe/Ronan projects are provided in Table 4-1. The baseline conditions described in the table were determined through the *Biological Assessment for Operation and Maintenance of the Flathead Indian Irrigation Project, Including Transfer*, completed in 2008 and the *Final Supplemental Biological Assessment for Operation and Maintenance of the Flathead Indian Irrigation Project, Including Transfer*, both completed by the Bureau of Indian Affairs These documents contain the most current habitat and population status information available for bull trout in the Post Creek drainage (Barfoot, 2017).

Most habitat parameters are functioning at risk or at unacceptable risk with only the average wetted width/maximum depth ratio baseline functioning appropriately. When species and habitat conditions are considered together, the overall baseline conditions are functioning at unacceptable risk because of the small population size, genetic isolation, lack of a self-sustaining population below McDonald Lake, and the threat of brook trout hybridization [BIA, 2008].

The proposed action at Post Creek will result in short-term temporary impacts from removal of the existing pier in the channel and from removal of the existing bridge end bents. Diagnostic Pathway Indicators to be temporarily affected by these actions include sediment, substrate

embeddedness, and streambank condition. All remaining indicators will be unaffected by the proposed action.

Table 4-1. Effects Matrix Checklist for the Montana Department of Transportation Proposed Post Creek Bridge Replacement

Diagnostic/Pathways: Indicators	Population and Environmental Baseline (FA, FAR, FUR)[a]	Major Effects[a] of the Action(s) (Restore, Maintain, Degrade)	Minor Effects[c] of the Action(s) (Restore, Maintain, Degrade)	Comments
Subpopulation Characteristics				
Subpopulation Size	FUR	Maintain	Maintain	
Growth and Survival	FUR	Maintain	Maintain	
Life History Diversity and Isolation	FUR	Maintain	Maintain	
Persistence and Genetic Integrity	FUR	Maintain	Maintain	
Water Quality				
Temperature	FAR	Maintain	Maintain	
Sediment	FUR	Maintain	Degrade	Temporary Impact
Chemical Contamination/ Nutrients	FAR	Maintain	Maintain	
Habitat Access				
Physical Barriers	FUR	Maintain	Maintain	
Habitat Elements				
Substrate Embeddedness	FAR	Maintain	Degrade	Temporary Impact
Large Woody Debris	FAR	Maintain	Maintain	
Pool Frequency and Quality	FUR	Maintain	Maintain	
Large Pools	FAR	Maintain	Maintain	
Off-Channel Habitat	FAR	Maintain	Maintain	
Refugia	FUR	Maintain	Maintain	
Channel Condition and Dynamics				
Wetted Width/ Max Depth Ratio	FA	Maintain	Maintain	
Streambank Condition	FAR	Maintain	Degrade	Temporary Impact
Floodplain Connectivity	FAR	Maintain	Restore	
Flow and Hydrology				
Change in Peak/Base Flows	FUR	Maintain	Maintain	
Drainage network Increase	FUR	Maintain	Maintain	
Watershed Conditions				
Road Density and Location	FAR	Maintain	Maintain	
Disturbance History	FAR	Maintain	Maintain	
Riparian Conservation Area	FAR	Maintain	Maintain	
Disturbance Regime	FAR	Maintain	Maintain	
Integration of Species and Habitat Condition	FUR	Maintain	Maintain	

(a) FA = Functioning Acceptable, FAR = Functioning at Risk, FUR = Functioning at Unacceptable Risk
(b) Major effects - change one level from baseline condition (e.g., FA to FAR).
(c) Minor effects - indicates action may result in an incremental or cumulative effect but does not result in a functional change to the system (no change in functional level).

4.2 POTENTIAL INDIRECT IMPACTS

Indirect effects are those impacts that are caused by the action and occur later in time (after the action is completed) but are still reasonably certain to occur. The Action Area of the proposed project occurs in an agricultural valley setting where human development is prevalent across the landscape. The proposed highway reconstruction would serve to improve traffic flow on US 93 and improve driver safety but is not expected to precipitate or induce human growth in the Action Area that would have an adverse impact to T&E species. Additionally, the project would not result in habitat alterations that would cause an indirect effect on prey abundance or availability for any T&E species. This project is not expected to increase long-term ambient noise levels in the Action Area rendering occupied habitat less suitable. The improved and widened roadway will likely result in slightly increased traffic speeds in the Action Area which could result in increased wildlife/vehicle collisions. Improved driver site distance may offset the potential for more collisions due to higher speeds by providing the driver more time to avoid such a collision.
From an aquatic standpoint, the widened roadway would require more sanding material during winter snow events, thus potentially introducing additional sediment into local streams. The new bridge over Post Creek is being designed such that all surface runoff is directed to the south bridge end where it will be discharged into the roadside ditches. The point of discharge into the roadside ditch is approximately 106 meters (350 ft) from Post Creek. Because bull trout are considered rare and do not spawn in Post Creek in the Action Area, this indirect effect is considered discountable for its effects on bull trout.

4.3 INTERRELATED AND INTERDEPENDENT EFFECTS

An interrelated action is an action that is part of a larger action and depends on the larger action for its justification. An interdependent action is defined as an action having no independent utility apart from the proposed action. The proposed project will require a borrow material site and staging areas for equipment, gravel stockpiles, and a temporary asphalt plant. The locations of these features are currently unknown and fall under the responsibility of the contractor, but these interrelated actions will need to be reviewed for their potential impact to T&E species in the project area before construction. No interdependent project effects have been identified in association with the proposed action.

4.4 CUMULATIVE EFFECTS

Cumulative impacts include the effects of the proposed project in relation to past, present, and reasonably foreseeable future state, tribal, local, or private actions in the Action Area. Future

federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA. A cumulative impacts analysis studies the additive effect of the proposed action's residual impact (that which remains after applying Avoidance and Minimization Measures) in relation to the residual impacts generated by past, present, and reasonably foreseeable actions within the cumulative analysis area.

The proposed project's residual impacts include net habitat loss for grizzly bears and short-term degradation of water quality in bull trout waters. Other ongoing actions in the cumulative analysis area that could influence both water quality and habitat include development on tribal and private parcels in the Action Area and ongoing off-system road maintenance administered by the tribe. Potential threats to grizzly bears from future development include loss of vegetative cover within the road corridor, along travel corridors between the mountains and the valley, and the presence of human activity near crossing structures. Loss of cover and the presence of humans could deter grizzly bears from using these areas or cause human/grizzly conflicts.

Other ongoing actions in the cumulative effects analysis area may contribute to cumulative downstream sedimentation in project area streams during construction. The proposed action along the US 93 Evaro to Polson corridor would rectify some impacts on streams from other actions by replacing or adding culverts where they are currently undersized or lacking, by replacing some culverts with bridges or larger culverts to improve hydrologic connectivity in the system, and by restoring streams in the highway ROW. With implementation of the improved structures, the cumulative effect of other actions on fisheries resources may be reduced. Similarly, construction of wildlife crossing structures as proposed for the US 93 Evaro to Polson project would facilitate wildlife movement across the project corridor and would reduce some of the cumulative effects of other activities [Herrera Environmental Consultants, 2005].

The CSKT Kerr Dam Fish and Wildlife Mitigation settlement with Pacific Power and Light (PPL) Montana is a mitigation plan and monetary settlement with the goal of mitigating the impacts of Seli'š Ksanka Qlispe' (Kerr Dam) during the period from 1985 to 2035. The settlement includes acquiring approximately 1,375 hectares (3,398 acres) of wildlife habitat, much of it surrounding the Ninepipe National Wildlife Refuge and Kicking Horse Reservoir. These lands would then be restored and enhanced for wildlife production. A key component of the mitigation work would be to acquire habitats that are adjacent to or complement those owned by the Montana Fish, Wildlife, and Parks (MFWP) and the USFWS. Such areas provide foraging habitat for grizzly bears. The greatest benefit from this habitat protection project for bull trout would occur if lands in the Post Creek riparian corridor were preserved [Herrera Environmental Consultants, 2005].

4.5 DETERMINATION OF EFFECT—FEDERALLY PROTECTED SPECIES

This section provides a determination of effect for each of the nine threatened and endangered species addressed in this analysis. As part of this analysis, a determination of whether or not the

project would result in "take" of a listed species has been made. The term "take," as applied in the ESA, includes to "harm" (significant impairment of behavioral patterns such as breeding, feeding sheltering, and others), "harass" (significant disruption of normal behavior patterns which include, but are not limited to, breeding, feeding, sheltering, or others), pursue, hunt, shoot, wound, capture, trap, or collect [USFWS, 1998b]. For the purposes of Section 7 of the ESA, any action that has more than a negligible potential to result in "take" is likely to adversely affect a proposed/listed species [USFWS, 1998b]. Take, as defined in the ESA, applies to the individual level; consequently, actions that have more than a negligible potential to cause take of individuals of a species are "likely to adversely affect" that species [USFWS, 1998b].

4.5.1 Canada Lynx

Because the proposed project does not occur within occupied lynx habitat and the potential for lynx to occur in the Action Area is low, it has been determined that the proposed project will have ***No Effect*** on Canada lynx. Additionally, no federally designated lynx critical habitat exists within the Action Area and, therefore, none would be impacted. Therefore, a ***No Adverse Modification*** determination has been made for designated Canada lynx critical habitat

4.5.2 Grizzly Bear

The proposed project would result in the permanent loss of grizzly bear habitat in the Post Creek and Nipepipe area immediately adjacent to US 93 and would also have potential short-term impacts because individual bears may be displaced by construction noise and human activity in the vicinity of the projects. Additionally, until the new roadway and associated wildlife crossings are constructed, a higher risk of grizzly bear mortalities on US 93 for the next 5–10-year window is likely. Proposed mitigation in the form of wildlife crossings and guide fencing will provide a long-term benefit to grizzly bear movement in the highway corridor and reduce the frequency of grizzly mortalities from current levels. Through this analysis, a ***May Affect, Likely to Adversely Affect*** determination has been rendered for grizzly bear.

4.5.3 Yellow-billed Cuckoo

As discussed previously, documented records for this species in Montana are very few and records for Lake County date back over 20 years. Because the proposed project does not occur within occupied yellow-billed cuckoo habitat and the potential for individuals to occur in the Action Area is extremely low, it has been determined that the proposed project will have ***No Effect*** on yellow-billed cuckoo.

4.5.4 Bull Trout

The USFWS "Dichotomous Key For Making Endangered Species Act Determinations of Effect from A Framework to Assist in Making Endangered Species Act Determinations of Effect" [USFWS, 1998b] was applied in making the determination of effect. This key, along with the rationale for the highlighted conclusions, is provided below.

DICHOTOMOUS KEY FOR MAKING ESA DETERMINATION OF EFFECTS
(conclusions are bolded and underlined)

1. Are there any proposed/listed fish species and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

   No - No Effect
   Yes (or unknown) - Go to 2

   See Section 3.4.4 - Distribution in Project Area.

2. Will the proposed action(s) have any effect whatsoever on the species designated or proposed critical habitat; seasonally or permanently occupied habitat; or unoccupied habitat necessary for the species' survival?

   No – No Effect
   Yes (May Affect) - Go to 3

   See Section 4.0 for potential impacts from bridge construction to bull trout habitat.

3. Does the proposed action(s) have the potential to result in "take" of any proposed/listed fish species?

   A. No - Go to 4
   B. Yes - Likely to Adversely Affect

   Bull trout are considered rare in the vicinity of the U.S 93 Post Creek Bridge [CSKT 2000c; Barfoot 2014]. The proposed project site is considered nodal habitat for migratory juveniles and adults [Barfoot, 2014]. Because of the potential for incidental "take" from instream pier removal during removal of the existing bridge and work on or near the banks of Post Creek during construction of the new bridge, this project has greater than negligible potential to result in incidental "take" of bull trout.

Based on the above information and implementation of specified conservation measures, a ***May Affect, Likely to Adversely Affect*** determination is rendered relative to bull trout. No federally designated bull trout critical habitat exists within the Action Area, therefore, none would be impacted. Therefore, a ***No Effect*** determination has been made for designated bull trout critical habitat.

4.5.5 Spalding's Campion

As discussed previously, few documented records exist for this species in Montana and no records exist for the immediate project area. Because the proposed project does not occur within undisturbed bunchgrass communities typical of Palouse ecosystems and the potential for individuals to occur in the Action Area is extremely low, it has been determined that the proposed project will have ***No Effect*** on Spalding's campion.

4.5.6 Water Howellia

As discussed previously, there are few documented records for this species in Montana and none for the immediate project area. The nearest known populations occur in the Swan Valley on the other side of the Mission Mountain Range. Because the proposed project does not occur within the known distributional range of this species and the potential for individuals to occur in the Action Area is extremely low, it has been determined that the proposed project will have ***No Effect*** on water howellia.

4.5.7 Wolverine

Potential impacts to wolverine or its preferred habitat resulting from the project is considered a less-than substantial event because it is highly unlikely that wolverine would occur in the action area during construction. Key habitat components of the wolverine will not be affected by completion of this project as this work will occur on or immediately adjacent to the current roadway alignment.

Because the proposed project does not occur within the elevational range of wolverine and none occur within the Action Area, it has been determined that the proposed project will ***Not Jeopardize the Continued Existence*** of wolverine.

4.5.8 Meltwater Lednian Stonefly

The proposed project occurs at low elevations in the valley bottom and will have no impacts to high-elevation, glacier-fed streams that provide habitat for this species of stonefly. The proposed project **will not jeopardize the continued existence** of this species.

4.5.9 Whitebark Pine

Because the proposed project does not occur within the elevational range of whitebark pine and none occurs with the Action Area, it has been determined that the proposed project will ***Not Jeopardize the Continued Existence*** of whitebark pine.

5.0 BIBLIOGRAPHY

Aune, K. A. and W. Kasworm, 1989. *Final Report East Front Grizzly Study*, prepared by the Montana Department of Fish, Wildlife & Parks, Helena, MT.

Barfoot, C., 2014. Electronic communication between C. Barfoot, Confederated Salish and Kootenai Tribes, Polson, MT, and M. Traxler, RESPEC, Helena, MT, May 14.

Barfoot, C., 2017. Electronic communication between C. Barfoot, Confederated Salish and Kootenai Tribes, Polson, MT, and J. Weigand, Montana Department of Transportation, Helena, MT, September 28.

Bureau of Indian Affairs, 2008. *Final Biological Assessment for Operation and Maintenance of the Flathead Indian Irrigation Project, Including Transfer*, prepared for the Bureau of Indian Affairs, Washington, DC.

Bureau of Indian Affairs, 2009. *Final Supplemental Biological Assessment for Operation and Maintenance of the Flathead Indian Irrigation Project, Including Transfer*, prepared for the Bureau of Indian Affairs, Washington, DC.

Christensen, A., 1982. *Cumulative Effects Analysis Process*, prepared for Kootenai National Forest, Libby, MT.

Confederated Salish and Kootenai Tribe, 2000. *Biological Assessment: Yatchek Property-Riparian Non-Wetlands Mitigation*, prepared by the Confederated Salish and Kootenai Tribes, Natural Resources Department, Ronana, MT, for the U.S. Fish and Wildlife Service, Section 7 Consultation, Helena, MT.

Confederated Salish and Kootenai Tribe, 2014. *Flathead Indian Reservation, Post Creek Area Bear Movement Report*, prepared by the Confederated Salish and Kootenai Tribes, Natural Resources Department, Ronana, MT, for the Montana Department of Transportation, Helena, MT.

Costello, C.M., R.D. Mace, and L. Roberts. 2016. Grizzly bear demographics in the Northern Continental Divide Ecosystem, Montana: research results (2004–2014) and suggested techniques for management of mortality. Montana Department of Fish, Wildlife and Parks. Helena.

Federal Highway Administration, 1996. *F 5-1(9)6, U.S. Highway 93 Evaro- Poison Missoula and Lake Counties, Montana, Final Environmental Impact Statement and Section 4(f) Evaluation*, FWHA-MT-EIS-95-01-FD, prepared by theFederal Highway Administration, Washington, DC.

Federal Highway Administration, 2008. *US Highway 93 Ninepipe/Rowan Improvement Project, Final Supplemental Environmental Impact Statement and Section 4(f) Evaluation, Volume I*, prepared by the Federal Highway Administration, Washington, DC.

Herrera Environmental Consultants, 2001. *Biological Assessment; US Highway 93 Reconstruction, Evaro to Polson*, prepared by Herrera Environmental Consultants, Seattle, WA, for Skillings Connolly, Inc., Lacey, WA, and Montana Department of Transportation, Helena, MT.

Herrera Environmental Consultants, 2005. *Biological Assessment; US 93 Ninepipe/Ronan Improvement Project*, prepared by Herrera Environmental Consultants, Seattle, WA, for the Montana Department of Transportation, Helena, MT, and the Federal Highway Administration, Seattle, WA.

Interagency Grizzly Bear Committee, 2016. "Northern Continental Divide Ecosystem," *igbconline.org*, retrieved October 5, 2016, from *http://igbconline.org/northern-continental-divide/*

Interagency Lynx Biology Team, 2013. Canada Lynx Conservation Assessment and Strategy, 3rd edition, Forest Service Publication R1-13-19, prepared for the U. S. Forest Service, Washington, DC; U.S. Fish and Wildlife Service, Washington, DC; Bureau of Land Management, Washington, DC; and National Park Service, Washington, DC.

Kasworm, W., M. Proctor, C. Servheen, and D. Paetkau, 2007. "Success of Grizzly Bear Population Augmentation in Northwest Montana," *Journal of Wildlife Management*, Vol. 71, No. 4, pp. 1261–1266.

Kendall, K. C., J. B. Stetz, J. Boulanger, A. C. Macleod, D. Paetkau, and G. C. White, 2009. "Demography and Genetic Structure of a Recovering Grizzly Bear Population," *Journal of Wildlife Management*, Vol. 73, No. 1, pp. 3–16.

Koehler, G. M. and K. B. Aubry, 1994. "Lynx," Chapter 4 of *The Scientific Basis for Conserving Forest Carnivores: American Marten, Fisher, Lynx, and Wolverine in the Western United States*, General Technical Report RM-254, L. F. Ruggiero, K. B. Aubry, S. W. Buskirk, J. L. Lyon, W. J. Zielinski, (eds.), prepared by the U.S. Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

Lesica, P., 2012. *Manual of Montana Vascular Plants*, Brit Press, Fort Worth, Texas.

Mace, R. and L. Roberts, 2012. *Northern Continental Divide Ecosystem Grizzly Bear Monitoring Team Annual Report*, 2012, prepared by the Montana Fish, Wildlife & Parks, Kalispell, MT (unpublished).

Madel, M. J., 1982. *Grizzly Habitat Component Mapping*, prepared for Kootenai National Forest, Libby, MT.

McGrath, M., 2015. Personal communication between M. McGrath, U.S. Fish and Wildlife Service, Helena, MT, and M. Traxler, RESPEC, Helena, MT, February 3.

Mancuso, M., 1996. *Species Account: Silene spaldingii*, prepared by The Nature Conservancy, Bozeman, MT, Natural Heritage Network, and Idaho Conservation Data Center, Boise, ID.

Montana Bull Trout Restoration Team, 2000. *Restoration Plan for Bull Trout in the Clark Fork River Basin and Kootenai River Basin Montana*, prepared by Montana Bull Trout Restoration Team, Montana Department of Fish, Wildlife, and Parks, Helena, MT.

Montana Bull Trout Scientific Group, 1998. *The Relationship Between Land Management Activities and Habitat Requirements of Bull Trout*, prepared by The Montana Bull Trout Scientific Group, Helena, MT, for The Montana Bull Trout Restoration Team, Montana Fish, Wildlife, and Parks, Helena, MT.

Montana Natural Heritage Program, 2015. "Biological Information on Montana SPECIES of Concern," *mt.gov*, accessed April 8, 2015, from *http://fieldguide.mt.gov*

Morrison-Maierle Environmental Corp, 1995. *Biological Assessment: F 5-1(9)(6), U.S. Highway 93 Evaro-Polson, Missoula and Lake Counties, Montana*, prepared by Morrison-Maierle Corp, Helena, MT, for the Montana Department of Transportation, Helena, MT.

Nellis, C. H. 1989. "Lynx (*Felis lynx*)," in *Rare, Sensitive, and Threatened Species of the Greater Yellowstone* Ecosystem, T. W. Clark, A. H. Harvey, R. D. Dorn, D. L. Genter, and C. Groves, (eds.), prepared by the Northern Rockies Conservation Cooperative, Jackson, WY; Montana Natural Heritage Program, Helena, MT; The Nature Conservancy, Bozeman, MT; and Mountain West Environmental Services, Cheyenne, WY, and Helena, MT.

Peoples Way Partnership, 2015. "Highway 93N Wildlife Crossing Structures," *peopleswaywildlifecrossings.org*, accessed December 5, 2015, from *http://www.peoplesway wildlifecrossings.org/*

Reel, S., L. Schassberger, and W. Ruediger, 1989. *Caring for Our Natural Community: Region 1 - Threatened, Endangered & Sensitive Species Program*, prepared by the U.S. Forest Service, Northern Region, Missoula, MT.

Schwartz, M. K., K. L. Pilgrim, K. S. McKelvey, E. L. Lindquist, J. J. Clarr, S. Loch, and L. F. Ruggerio, 2004. "Hybridization Between Canada Lynx and Bobcats: Genetic Results and Management Implications," *Conservation Genetics*, Vol. 5, pp. 349–355.

Squires, J. R. and L. F. Ruggiero. 2007. "Winter Prey Selection of Canada Lynx in Northwestern Montana, *Wildlife Management*," Vol. 71, No. 2, pp. 310–315.

Tisdale, E. W., 1961. "Ecological Changes in the Palouse," *Northwest Science*, Vol. 35, pp. 134–138.

U.S. Fish and Wildlife Service, 1994. "Determination of Threatened Status for the Plant, Water Howellia (*Howellia aquatilis*)," Final Rule, *Federal Register*, Vol. 59, No. 134, July 14.

U.S. Fish & Wildlife Service, 1998a. *A Framework to Assist in Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Bull Trout Subpopulation Watershed Scale*, prepared by U.S. Fish & Wildlife Service, Washington, DC.

U.S. Fish & Wildlife Service, 1998b. *Endangered Species Consultation Handbook, Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act*, prepared by the U.S. Fish & Wildlife Service, Washington, DC, and National Marine Fisheries Service, Silver Spring, MD.

U.S. Fish and Wildlife Service, 1999. "Determination of Threatened Status for the Bull Trout in the Coterminous United States," Final Rule, *Federal Register*, Vol. 64, No. 210, November 1.

U.S. Fish and Wildlife Service, 2000. "Endangered and Threatened Wildlife and Plants: Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule; Final Rule," *Federal Register*, Vol. 65, No. 58, March 24.

U.S. Fish and Wildlife Service, 2005. "Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Bull Trout," *Federal Register*, Vol. 7, No. 185, September 26.

U.S. Fish & Wildlife Service, 2005. *Biological Opinion for the Affects to Threatened Bull Trout (Salvelinus confluentus) and Threatened Grizzly Bear (Ursus arctos horribilis) From the Reconstruction of U.S. Highway 93 Between Evaro and Polson (Ninepipe Area) in Lake County, Montana*, prepared by U.S. Fish & Wildlife Service, Helena, MT, for the Federal Highway Administration Montana Division, Helena, MT.

U.S. Fish & Wildlife Service, 2007. "Recovery Plan for Silene spaldingii *(Spalding's Catchfly)*," *fws.gov*, accessed March 25, 2011, from *http://www.fws.gov/endangered/species/recovery-plans.html*

U.S. Fish and Wildlife Service, 2010. "Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for Bull Trout in the Coterminous United States; Final Rule, *Federal Register*, Vol. 75, No. 200, October 18.

U.S. Fish and Wildlife Service, 2011. "Endangered And Threatened Wildlife And Plants; 12-Month Finding On A Petition To List Whitebark Pine As Endangered Or Threatened With Critical Habitat*, Federal Register*, Vol. 76, No. 138, July 19.

U.S. Fish & Wildlife Service, 2013. *Northern Continental Divide Ecosystem Grizzly Bear Draft Conservation Strategy*, prepared by the U.S. Fish & Wildlife Service, Washington, DC.

U.S. Fish & Wildlife Service, 2014a. "Grizzly Bear Recovery," *fws.gov*, accessed December 2, 2014, from *http://www.fws.gov/mountain-prairie/species/mammals/grizzly/*

U.S. Fish & Wildlife Service, 2014b. "Yellow-Billed Cuckoo Species Profile," *fws.gov*, accessed December 2, 2014, from *http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06R*

U.S. Fish & Wildlife Service, 2017. *Endangered, Threatened, Proposed, and Candidate Species in Montana Counties*, prepared by U.S. Fish and Wildlife Service, Montana Field Office, Helena, MT.

Waller, J. S. and C. Servheen, 1999. "Documenting Grizzly Bear Highway Crossing Patterns Using GPS Technology," Proceedings of the Third International Conference on Wildlife Ecology and Transportation, (G. Evink, P. Garret, and D. Zeigler), Missoula, MT.

APPENDIX A

US 93 EVARO TO POLSON WILDLIFE CROSSING SUMMARY TABLE (2015)

Table A-1. US 93 Evaro to Polson Wildlife Crossing Summary Table (Page 1 of 2)

Structure Name	Crossing Location by Reference Post	Type	Size (ft)	Length (ft)	Project I.D.	Project No.	Control No.	Construction Limits by Reference Post	Year(s) Constructed
Frog Creek	7.80	Corregated Metal Pipe	10 × 7	95	US 93-Evaro - McClure Road	NH 5-1(30)6	L744	6.4 to 12.8	2008–2010
North Evaro	8.75	Corregated Metal Pipe	25 × 17	85	US 93-Evaro - McClure Road	NH 5-1(30)6	L744	6.4 to 12.8	2008–2010
Rail Road Xing	9.68	Bridge	39 w × 23 h	340	US 93-Evaro - McClure Road	NH 5-1(30)6	L744	6.4 to 12.8	2008–2010
Finley Cr #1	10.05	Corregated Metal Pipe	26 × 18	105	US 93-Evaro - McClure Road	NH 5-1(30)6	L744	6.4 to 12.8	2008–2010
Finley Cr #2	10.25	Corregated Metal Pipe	26 × 18	72	US 93-Evaro - McClure Road	NH 5-1(30)6	L744	6.4 to 12.8	2008–2010
Evaro Overpass	10.35	Overpass (concrete arch)	49 wide	197 top	US 93-Evaro - McClure Road	NH 5-1(30)6	L744	6.4 to 12.8	2008–2010
Finley Cr #3	10.50	Corregated Metal Pipe	25 × 17	81	US 93-Evaro - McClure Road	NH 5-1(30)6	L744	6.4 to 12.8	2008–2010
Finley Cr #4	10.82	Corregated Metal Pipe	26 × 18	83	US 93-Evaro - McClure Road	NH 5-1(30)6	L744	6.4 to 12.8	2008–2010
Schley Creek	10.90	Corregated Metal Pipe	25 × 17	100	US 93-Evaro - McClure Road	NH 5-1(30)6	L744	6.4 to 12.8	2008–2010
EF Finley Cr	12.25	Corregated Metal Pipe	25 × 17	80	US 93-Evaro - McClure Road	NH 5-1(30)6	L744	6.4 to 12.8	2008–2010
Agency Creek	15.62	Concrete Box Culvert	6 × 6	115	US 93-McClure Rd-N Arlee Couplet	NH 5-1(31)13	M744	12.8 to 18.5	2008–2009
Jocko #1	18.82	Concrete Box Culvert	7 × 7	148	US 93-N Arlee-Vic White Coyote Rd	NH 5-2(119)19	N744	18.5 to 20.0	2004–2005
Jocko #2	18.86	Concrete Box Culvert	7 × 7	141	US 93-N Arlee-Vic White Coyote Rd	NH 5-2(119)19	N744	18.5 to 20.0	2004–2005
Jocko #3	18.90	Concrete Box Culvert	7 × 7	131	US 93-N Arlee-Vic White Coyote Rd	NH 5-2(119)19	N744	18.5 to 20.0	2004–2005
Jocko River	18.95	Bridge	54 w × 12h	394	US 93-N Arlee-Vic White Coyote Rd	NH 5-2(119)19	N744	18.5 to 20.0	2004–2005
Schalls Flats	23.00	Concrete Box Culvert	8 × 8	122	US 93-Vic White Coyote Rd - S Ravalli	NH 5-2(120)20	O744	20.0 to 26.7	2006–2007
Jocko/Spring Cr	23.20	Bridge	39 w × 10 h	100	US 93-Vic White Coyote Rd - S Ravalli	NH 5-2(120)20	O744	20.0 to 26.7	2006–2007
Ravalli Curves #1	24.20	Corregated Metal Pipe	22 × 16	72	US 93-Vic White Coyote Rd - S Ravalli	NH 5-2(120)20	O744	20.0 to 26.7	2006–2007
Ravalli Curves #2	24.80	Corregated Metal Pipe	22 × 16	84	US 93-Vic White Coyote Rd - S Ravalli	NH 5-2(120)20	O744	20.0 to 26.7	2006–2007
Jocko Side Channel	25.75	Bridge	39 w × 12 h	100	US 93-Vic White Coyote Rd - S Ravalli	NH 5-2(120)20	O744	20.0 to 26.7	2006–2007
Ravalli Curves #3	26.06	Concrete Box Culvert	4 × 6	90	US 93-Vic White Coyote Rd - S Ravalli	NH 5-2(120)20	O744	20.0 to 26.7	2006–2007
Ravalli Curves #4	26.13	Concrete Box Culvert	7 × 5	82	US 93-Vic White Coyote Rd - S Ravalli	NH 5-2(120)20	O744	20.0 to 26.7	2006–2007
Ravalli Curves #5	26.28	Concrete Box Culvert	4 × 6	80	US 93-Vic White Coyote Rd - S Ravalli	NH 5-2(120)20	O744	20.0 to 26.7	2006–2007
Copper Creek	26.40	Corregated Metal Pipe	25 × 18	60	US 93-Vic White Coyote Rd - S Ravalli	NH 5-2(120)20	O744	20.0 to 26.7	2006–2007
Ravalli Hill #2	28.10	Corregated Metal Pipe	17 × 24	128	US 93-South of Ravalli - Medicine Tree	NH 5-2(121)27	P744	26.7 to 31.4	2006–2007
Ravalli Hill #1	28.40	Corregated Metal Pipe	17 × 24	102	US 93-South of Ravalli - Medicine Tree	NH 5-2(121)27	P744	26.7 to 31.4	2006–2007

Table A-1. US 93 Evaro to Polson Wildlife Crossing Summary Table (Page 2 of 2)

Structure Name	Crossing Location by Reference Post	Type	Size (ft)	Length (ft)	Project I.D.	Project No.	Control No.	Construction Limits by Reference Post	Year(s) Constructed
Pistol Cr #1	30.48	Corregated Metal Pipe	17 × 24	131	US 93-South of Ravalli - Medicine Tree	NH 5-2(121)27	P744	26.7 to 31.4	2006–2007
Pistol Cr #2	30.65	Corregated Metal Pipe	17 × 24	131	US 93-South of Ravalli - Medicine Tree	NH 5-2(121)27	P744	26.7 to 31.4	2006–2007
Sabine Creek	31.75	Corregated Metal Pipe	24 × 13	48	US 93-Medicine Tree-Vic Red Horn Rd	NH 5-2(122)31	Q744	31.4 to 36.8	2006–2007
Mission Creek	32.43	Bridge	51 w × 10 h	131	US 93-Medicine Tree-Vic Red Horn Rd	NH 5-2(122)31	Q744	31.4 to 36.8	2006–2007
Mission Stockpass	33.42	Concrete Box Culvert	7 × 7	94	US 93-Medicine Tree-Vic Red Horn Rd	NH 5-2(122)31	Q744	31.4 to 36.8	2006–2007
Post Cr #1	33.80	Corregated Metal Pipe	24 × 16	95	US 93-Medicine Tree-Vic Red Horn Rd	NH 5-2(122)31	Q744	31.4 to 36.8	2006–2007
Post Cr #2	34.08	Corregated Metal Pipe	24 × 16	72	US 93-Medicine Tree-Vic Red Horn Rd	NH 5-2(122)31	Q744	31.4 to 36.8	2006–2007
Post Cr #3	34.40	Corregated Metal Pipe	24 × 13	64	US 93-Medicine Tree-Vic Red Horn Rd	NH 5-2(122)31	Q744	31.4 to 36.8	2006–2007
Post Cr #4	34.50	Corregated Metal Pipe	6 ×4	130	US 93-Medicine Tree-Vic Red Horn Rd	NH 5-2(122)31	Q744	31.4 to 36.8	2006–2007
Post Cr #5	34.75	Corregated Metal Pipe	8 × 8	104	US 93-Medicine Tree-Vic Red Horn Rd	NH 5-2(122)31	Q744	31.4 to 36.8	2006–2007
Post Cr #6	36.40	Corregated Metal Pipe	6 × 4	96	US 93-Medicine Tree-Vic Red Horn Rd	NH 5-2(122)31	Q744	31.4 to 36.8	2006–2007
Post Cr #7	36.73	Corregated Metal Pipe	6 × 4	104	US 93-Medicine Tree-Vic Red Horn Rd	NH 5-2(122)31	Q744	31.4 to 36.8	2006–2007
Ronal Canal #1	48.75	Concrete Span Arch	28 × 10	146	US 93-Spring Creek Rd - Minesinger Trail	NH 5-2(123)48	H744	48.3-56.0	2007–2009
Ronan Stockpass	49.17	Concrete Culvert	14 × 14	155	US 93-Spring Creek Rd - Minesinger Trail	NH 5-2(123)48	H744	48.3-56.0	2007–2009
Ronal Canal #2	49.30	Concrete Span Arch	28 × 10	170	US 93-Spring Creek Rd - Minesinger Trail	NH 5-2(123)48	H744	48.3-56.1	2007–2009
Mud Creek	50.95	Concrete Span Arch	42 × 14	65	US 93-Spring Creek Rd - Minesinger Trail	NH 5-2(123)48	H744	48.3-56.1	2007–2009
Mud Creek (Old Hwy 93)	50.92	Concrete Span Arch	42 × 14	39	Mud Creek Structures	NH-PLH 5-2(142)51	1744011	50.7-51.1	2006–2007
Polson Hill	57.75	SSPP Concrete	12 × 22	104	US 93-Minesinger Trail to MT 35	NH 5-2(124)56	I744	56.0-58.1	xx

APPENDIX B

CONSERVATION STATUS TERMS AND DEFINITIONS

TERMS AND DEFINITIONS
Montana Natural Heritage Program (MTNHP) 2015 Species of Special Concern
Heritage Program Ranks*

The international network of Natural Heritage Programs employs a standardized ranking system to denote **global** (range-wide) and **state** status (NatureServe 2006). Species are assigned numeric ranks ranging from 1 (highest risk, greatest concern) to 5 (demonstrably secure, least concern), reflecting the relative degree of risk to the species' viability, based upon available information. Global ranks are assigned by scientists at NatureServe (the international affiliate organization for the heritage network) in consultation with biologists in the natural heritage programs and other taxonomic experts.

A number of factors are considered in assigning state ranks — population size, area of occupancy in Montana, short and long-term population trends, threats, intrinsic vulnerability, and specificity to environment. Based on these factors, a preliminary rank is calculated and is reviewed by members of the Montana Chapter of the Wildlife Society and Montana Chapter of the American Fisheries Society or other key experts. A committee of biologists from MNHP and MFWP then review these rankings for consistent documentation and application of the criteria. Detailed documentation of the criteria and assessment process are available on the MTNHP website at: **http://mtnhp.org/animal/2004_SOC_Criteria.pdf**

Among other things, the combination of global and state ranks often helps describe the proportion of a species' range and/or total population occurring in Montana. For instance, a rank of G3 S3 often indicates that Montana comprises most or a very significant portion of an animal's total population. In contrast, an animal ranked G5 S1 often occurs in Montana at the periphery of its much larger range; thus, the state supports a relatively small portion of its total population.

Rank		Definition
G1	**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.
G2	**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.
G3	**S3**	Potentially at risk because of **limited** and/or **declining** numbers, range and/or habitat, even though it may be abundant in some areas.
G4	**S4**	Apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining.
G5	**S5**	Common, widespread, and abundant (although it may be rare in parts of its range). Not vulnerable in most of its range.
GX	**SX**	Presumed Extinct or Extirpated - Species is believed to be extinct throughout its range or extirpated in Montana. Not located despite intensive searches of historical sites and other appropriate habitat, and small likelihood that it will ever be rediscovered.
GH	**SH**	Historical, known only from records usually 40 or more years old; may be rediscovered.
GNR	**SNR**	Not Ranked as of yet.
GU	**SU**	Unrankable - Species currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

GNA	**SNA**	A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities as a result of being: 1) not confidently present in the state; 2) exotic or introduced; 3) a long distance migrant with accidental or irregular stopovers; or 4) a hybrid without conservation value.

Combination or Range Ranks

G#G# or **S#S#** Indicates a range of uncertainty about the status of the species. *e.g. G1G3 = Global Rank ranges between G1 and G3 inclusive*

Sub-rank

T# Rank of a subspecies or variety. Appended to the global rank of the full species, *e.g. G4T3*

Qualifiers

Q **Questionable** taxonomy that may reduce conservation priority-Distinctiveness of this entity as a taxon at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. Appended to the global rank, *e.g. G3Q*

? **Inexact Numeric Rank** - Denotes uncertainty; inexactness.

A **Accidental** - Species is accidental or casual in Montana, in other words, infrequent and outside usual range. Includes species (usually birds or butterflies) recorded once or only a few times at a location. A few of these species may have bred on the few occasions they were recorded.

B **Breeding** - Rank refers to the breeding population of the species in Montana. Appended to the state rank, *e.g. S2**B**,S5N = At risk during breeding season, but common in the winter*

N **Nonbreeding** - Rank refers to the nonbreeding population of the species in Montana. Appended to the state rank, *e.g. S5B,S2**N** = Common during breeding season, but at risk in the winter*

M **Migratory** - Species occurs in Montana only during migration.

Federal Status

Designations in this column reflect the status of a species under the U.S. Endangered Species Act (ESA), or as "sensitive" by the U.S. Forest Service (USFS) or Bureau of Land Management (BLM).

U.S. Fish and Wildlife Service (Endangered Species Act)

Status, if any, of a taxon under the federal Endangered Species Act of 1973 (16 U.S.C.A. § 1531-1543 (Supp. 1996)) is noted.

Designation Descriptions

LE	**Listed endangered:** Any species in danger of extinction throughout all or a significant portion of its range (16 U.S.C. 1532(6)).
LT	**Listed threatened:** Any species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (16 U.S.C. 1532(20)).
C	**Candidate:** Those taxa for which sufficient information on biological status and threats exists to propose to list them as threatened or endangered. We encourage their consideration in environmental planning and partnerships; however, none of the substantive or procedural provisions of the Act apply to candidate species.
DM	**Recovered, delisted, and being monitored** - Any previously listed species that is now recovered, has been delisted, and is being monitored.
NL	**Not listed** - No designation.
XE	**Experimental - Essential population** - An experimental population whose loss would be likely to appreciably reduce the likelihood of the survival of the species in the wild.
XN	**Experimental - Nonessential population** - An experimental population of a listed species reintroduced into a specific area that receives more flexible management under the Act.
CH	**Critical Habitat** - The specific areas (i) within the geographic area occupied by a species, at the time it is listed, on which are found those physical or biological features (I) essential to conserve the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by the species at the time it is listed upon determination that such areas are essential to conserve the species.
PS	**Partial status** - status in only a portion of the species' range. Typically indicated in a "full" species record where an infraspecific taxon or population, that has a record in the database has USESA status, but the entire species does not.
PS:value	**Partial status** - status in only a portion of the species' range. The value of that status appears in parentheses because the entity with status is not recognized as a valid taxon by Central Sciences (usually a population defined by geopolitical boundaries or defined administratively, such as experimental populations.) For example, Yellow-billed Cuckoo (*Coccyzus americanus*) is ranked **PS:C**. Partial Status - Candidate. Designated as a Candidate in the Western U.S. Distinct Population Segment (DPS) (subspecies *occidentalis*)
BGEPA	**The Bald and Golden Eagle Protection Act of 1940 (BGEPA)** - (16 U.S.C. 668-668c) prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald or golden eagles, including their parts, nests, or eggs. The BGEPA provides criminal and civil penalties for persons who take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import,

at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The BGEPA defines take as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

MBTA

The Migratory Bird Treaty Act (MBTA) - (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) implements four treaties that provide for international protection of migratory birds. The statute's language is clear that actions resulting in a "taking" or possession (permanent or temporary) of a protected species, in the absence of a U.S. Fish and Wildlife Service (USFWS) permit or regulatory authorization, are a violation of the MBTA. The MBTA states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, kill ... possess, offer for sale, sell ... purchase ... ship, export, import ... transport or cause to be transported ... any migratory bird, any part, nest, or eggs of any such bird .... [The Act] prohibits the taking, killing, possession, transportation, import and export of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior." The word "take" is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." The USFWS maintains a **list of species protected by the MBTA** at 50 CFR 10.13. This list includes over one thousand species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines. The USFWS also maintains a **list of species not protected by the MBTA**. MBTA does not protect species that are not native to the United States or species groups not explicitly covered under the MBTA; these include species such as the house (English) sparrow, European starling, rock dove (pigeon), Eurasian collared-dove, and non-migratory upland game birds.

BCC

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the U.S. Fish and Wildlife Service to identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act. **Birds of Conservation Concern 2008 (BCC 2008)** is the most recent effort to carry out this mandate. The overall goal of this report is to accurately identify the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent the Service's highest conservation priorities.

Bureau of Land Management

BLM-Sensitive Species are defined by the BLM 6840 Manual as those that normally occur on BLM administered lands for which BLM has the capability to significantly affect the conservation status of the species through management. Such species should be managed to the level of protection required by State laws or under the BLM policy for candidate species, whichever would provide

better opportunity for its conservation. The State Director may designate additional categories of special status species as appropriate and applicable to his or her state's needs. The sensitive species designation, for species other than federally listed, proposed, or candidate species, may include such native species as those that:

1. Could become endangered in or extirpated from a state, or within a significant portion of its distribution in the foreseeable future.
2. are under status review by the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service,
3. are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution,
4. are undergoing significant current or predicted downward trends in population or density such that federally listed, proposed, candidate, or State listed status may become necessary,
5. have typically small and widely dispersed populations,
6. are inhabiting ecological refugia, specialized or unique habitats, or
7. are State listed but which may be better conserved through application of BLM-sensitive species status.

Designation Descriptions

Sensitive	Denotes species listed as sensitive on BLM lands
Special Status	Denotes species that are listed as Endangered or Threatened under the Endangered Species Act

U.S. Forest Service

U.S. Forest Service Manual (2670.22) defines Sensitive Species on Forest Service lands as those for which population viability is a concern as evidenced by a significant downward trend in population or a significant downward trend in habitat capacity. The Regional Forester (Northern Region) designates Sensitive species on National Forests in Montana. These designations were last updated in 2007 and they apply only on USFS-administered lands.

Designation Descriptions

Sensitive	Listed as a Sensitive Species by USFS Northern Region (R1)
Endangered	Listed as Endangered under the Endangered Species Act
Threatened	Listed as Threatened under the Endangered Species Act

Montana Natural Heritage Program, 2015. Heritage Program Ranks. Downloaded from the MTNHP website on April 9, 2015. http://mtnhp.org/SpeciesOfConcern/?AorP=a.